Basement Impact Assessment

Hillingdon Hospital

Hillingdon Hospitals NHS Foundation Trust

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	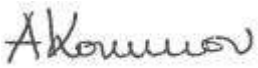		
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Revision History

Revision	Revision date	Details	Authorized	Name	Position
P01	31/01/2022	First Issue	Yes	Aris Zourmpakis	Technical Director
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The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this Report. The work described in this Report was undertaken between **November 2021** and **March 2022** and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances. AECOM disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to AECOM's attention after the date of the Report.

The exploratory holes carried out during the fieldwork, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The comments made and recommendations given in this Report are based on the ground conditions apparent at the site of the exploratory holes. There may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this Report.

The comments made on groundwater conditions are based on observations made during site work and the limited monitoring programme. It should be noted that groundwater levels might vary owing to seasonal or other effects. Monitoring of groundwater levels should continue throughout the construction of the basement box. Should groundwater be recorded at higher levels than assumed in the present analyses, the present report shall be reviewed and updated, if required.

Reference to historical Ordnance Survey (OS) maps and/or data provides invaluable information regarding the land use history of a site. However, it should be noted that historical evidence will be incomplete for the period pre-dating the first edition and between the release of successive maps and/or data.

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The present report shall be revised as the design of the proposed development further progresses (design of superstructure and basement, including but not limited to superstructure loads, pile lengths and diameter for bearing piles and retaining wall, construction sequence, temporary support stiffness) and when further site-specific ground investigation (GI) data becomes available. The damage classification shall be reviewed on the basis of the new data.

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Executive Summary

In accordance with Policy DMHD 3 of the *London Borough of Hillingdon Local Plan Part 2 – Development Management Policies (2020),* an assessment was undertaken to determine the impact on the local hydrology, hydrogeology and land stability associated with the proposed basement development at the site known as Hillingdon Hospital.

The London Borough of Hillingdon requires schemes to "ensure that they:

a) Do not harm the amenity of neighbours;

b) Do not lead to the loss of trees of townscape or amenity value;

c) Do provide satisfactory landscaping, including adequate soil depth;

d) Do not harm the appearance or setting of the property or the established character of the surrounding area, for example through the introduction of front lightwells; and

e) Do protect important archaeological remains."

Policy DMHD 3 states that "developers will be required to demonstrate by methodologies appropriate to the site that their proposals:

a) Avoid adversely affecting drainage and run-off or causing other damage to the water environment;

b) Avoid cumulative impacts upon structural stability or the water environment in the local area."

For points a) and b) the Basement Impact Assessment procedure outlined in the guidance document is adopted, including the following stages:

Stage 1: Screening

Stage 2: Scoping

Stage 3: Site investigation and study

Stage 4: Impact assessment

Stage 5: Review and decision making

This report provides information for stages 1 to 5 of the Basement Impact Assessment process. Geotechnical design parameters have been derived based on findings from recent ground investigations carried out on-site. A non-technical summary of the findings of the Basement Impact Assessment (BIA) report is presented below.

Calculations have been undertaken in accordance with CIRIA C760 to determine the impact of the works on the surrounding buildings. The BIA concludes that movements that may arise from the proposed basement excavation are not anticipated to adversely impact the neighbouring structures, with damage categories falling within the 'visual appearance or aesthetic' range of building strains (Damage Category 0 on Burland Scale). A total of 31no. trees will be felled for the purposes of the development but there are no existing buildings in the zone of influence of these trees that will be impacted by their removal.

The results of the Basement Impact Assessment are in compliance with Local Plan policies and meet London Borough of Hillingdon's requirements.

Qualifications

The following report has been prepared by

Name	Role	Qualifications
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1 Introduction

1.1 Aim of the Report

This Basement Impact Assessment has been prepared by AECOM Limited to accompany hybrid planning application being submitted by the Applicant, Hillingdon Hospitals NHS Foundation Trust, to the London Borough of Hillingdon. The proposal comprises hybrid planning application for:

1. FULL application seeking planning permission for demolition of existing buildings (refer to Appendix A) and redevelopment of the site to provide the new Hillingdon Hospital, multi-storey car park and mobility hub, a basement beneath a partial area of the proposed building footprint, vehicle access, highways works, associated plant, generators, substation, new internal roads, landscaping and public open space, utilities, servicing area, surface car park/ expansion space, and other works incidental to the proposed development.
2. OUTLINE planning application (all matters reserved, except for access) for the demolition of buildings and structures (refer to Appendix A) on the remaining site (excluding the Grade II Furze and Tudor Centre) for a mixed-use development comprising residential (Class C3) and supporting Commercial, Business and Service uses (Class E) as well as a basement beneath a partial area of the proposed building footprint, new pedestrian and vehicular access; public realm, amenity space, car and cycling parking. The proposed development will comprise up to 327 residential units (Use Class C3) and up to 800 sqm of town centre uses (Use Class E) in a series of buildings ranging in height from 3 up to 8 storeys with associated access and car parking for up to 302 vehicles and up to 515 cycle parking spaces, refuse storage, landscape and amenity areas and associated servicing.

AECOM has reviewed readily available information on the geotechnical and geo-environmental characteristics of the Site, undertaken a site reconnaissance visit to make a preliminary qualitative assessment of the potential ground-related risks associated with the proposed development and reviewed information from the Ground Investigations carried out by SOCOTEC UK Limited in 2021.

1.2 Report Objectives

This report has been prepared in general accordance with the procedures described in Policy DMHD 3 of the *London Borough of Hillingdon Local Plan Part 2 – Development Management Policies (2020)* to demonstrate that the design of the proposed development will achieve the following:

- Avoid adversely affecting drainage and run-off or causing other damage to the water environment;
- Avoid cumulative impacts upon structural stability or the water environment in the local area.

1.3 Sources of Information

This report has been prepared using a combination of published records, site-specific ground investigation data, and information held by the Client and other sources such as the Local Authority. These include statutory records and historical mapping supplied within a Groundsure Report, published geological and hydrogeological mapping, historical borehole records, observations made during the site reconnaissance, and the 2021 SOCOTEC Ground Investigation undertaken on-site.

The adopted Development Plan for The London Borough of Hillingdon (LBH), in so far as is relevant to the proposals, consists of:

- The London Plan (“LP”) (March 2021)
- The Local Plan: Part 1 - Strategic Policies (“LPP1”) (November 2012)
- The Local Plan: Part 2 - Development Management Policies (“LPP2”) (January 2020)
- The Local Plan: Part 2 - Site Allocations and Designations (“LPP2”) (January 2020)

Other material considerations include:

- National Planning Policy Framework (NPPF) (July 2021)

- National Planning Practice Guidance (PPG)
- LBH's Supplementary Planning Document (SPD) "Hillingdon Design and Accessibility Statement" (HDAS) (April 2006)
- LBH's SPD "Planning Obligations" (July 2014)

All information sources are included in the References section at the end of the present report.

2 Screening

2.1 Site Location and Layout

The Site is located on Pield Heath Road, Uxbridge within the London Borough of Hillingdon. It is nominally centred on National Grid Reference TQ 06780 81870 (506780E, 181870N). It is currently situated approximately 2.5km southeast of the Uxbridge London Underground station. A site location plan is provided in Figure 1 below.

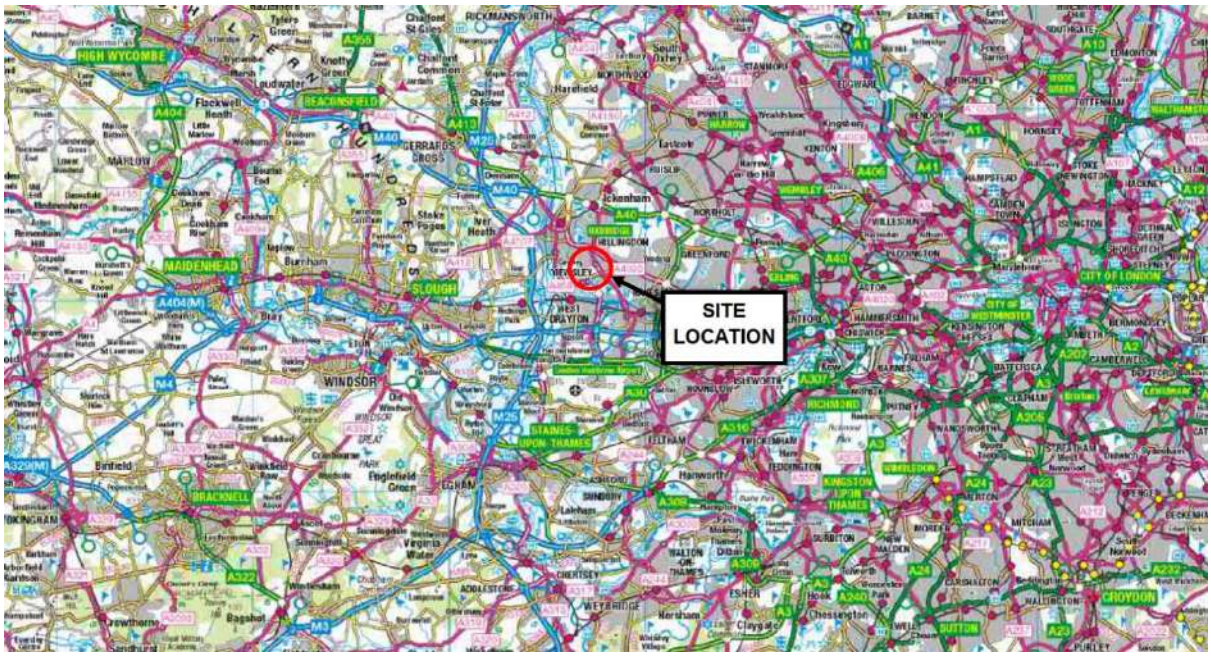

Figure 1: Site Location Plan

The area covered by the Site is approximately 9.61 hectares and is defined by the red line boundary shown in Figure 2; it is bounded by Pield Heath Road to the north, Colham Green Road to the east, and Royal Lane to the west.

Figure 2: Site Boundary

Hillingdon Hospital is located to the south of Pield Heath Road, bound by Royal Lane to the west, and Colham Green Road to the east. The site is located within the Brunel Ward. The site comprises a ten storey block built in the 1960s and a mix of other hospital buildings scattered across the site.

The remainder of the site consists mainly of surface level car parking, interspersed with pockets of landscaping. Hillingdon Hospital is located within the urban area of Hillingdon and is not subject to any designations such as Green Belt or site allocations. It is not within a conservation area.

The site is located within Flood Risk Zone 1. There are two Tree Preservation Order (TPO) within the site: one south of The Furze and the second is west of the Woodlands Centre. A culvert runs west-east crossing both TPO's and being canalised under the service road and partially under the Woodlands Centre. On the east of the Site is a Grade II Listed Building, The Furze.

There are several points of access to the site; the main entrance is from Pield Heath Road with a separate access for A&E. There are three separate access points from Royal Lane and a separate access from Colham Green Road. Cycle access is only through the vehicular traffic road path. The site has a PTAL rating of 3. There are three bus stops on Pield Heath Road with links to Uxbridge, Heathrow Central and Hayes Town. Uxbridge town centre is approximately 2km to the north west.

To the west of the site along Royal Lane comprises two storey detached and semi-detached residential properties, to the north west corner of the site lies a three storey flatted residential block rising to four storeys along Pield Health Road opposite the entrance to the Outpatient Department.

The site has no planning designation as confirmed by the Hillingdon Policies Map (2020).

A watercourse observed to flow in a south-westerly direction was traced across the southeast of the Site. The watercourse is heavily vegetated at surface south of the maternity ward and flows into a culvert beneath the Woodlands Centre. Sediment was observed discharging into the culvert from a side drain outside the Woodlands Centre. The culvert exits from underneath the Centre on the west side of the building; an additional drain was observed connecting to the culvert, which is understood to convey surface run-off from the wards in the centre of the Site.

The surface comprised tarmacadam or concrete over the majority of the Site and predominantly in car parking areas and along pedestrian walkways. Limited areas of open landscaped ground were present between buildings and along the Site boundaries with trees lining the surrounding footpaths. Mature trees are present in the south and north east of the Site, particularly around the on-site inland river. Two areas of tree preservation orders are present in the south and southeast of the Site according to the London Borough of Hillingdon Council. The Site is generally flat and level at an elevation of approximately +35mOD to +40mOD. The majority of the Site is on hard-standing except for the landscaped areas straddling the southern perimeter and confined garden green spaces for individual wards.

Various areas of scarring and rework were noted in the tarmacadam and concrete across the Site during the site visit, particularly around the hospital entrances in the west and the north of the Site. Areas of hard-standing were otherwise observed to be in generally good condition. No evidence of superficial staining was noted during the site walkover.

The maps show that the Site was predominantly undeveloped land until the development of the new hospital. The most significant development on-site was Hillingdon Hospital in the 1950s after World War II (WWII). Historical mapping and planning records indicate several phases of redevelopment of the existing hospital. Prior to this there had been several small buildings located in the eastern section of the Site named Hillingdon Furze. A small pond was noted to the north of the Site in 1973 and appears to be artificial; historical mapping also indicates the infilling of a pond in the eastern section of the Site in c. 1894. The hospital continued to expand with regards to additional buildings and carparks from the 1970s onwards. Several hazardous chemicals are currently stored on-site including above ground diesel and above ground oxygen silo tanks, as well as a below ground gas storage facility. The maps show that off-site historic and current development that might affect the proposed development include the original Hillingdon Hospital immediately north of the Site and a timber works approximately 30m southeast. The Site was predominantly surrounded by agricultural land in the late 1800s and early 1900s. The original hospital was known to exist to the north of the existing Site from 1920 along with Uxbridge workhouse. Relevant features immediately surrounding the Site are summarised in Table 2-1.

Table 2-1: Features surrounding the Site

Direction	Summary
North	Residential properties (three-four storey blocks of flats) with communal gardens beyond Pield Heath Road.
South	Ambulance station immediately southwest of the site boundary. Residential properties with gardens and commercial properties (nursery 25m and taxi company 30m).
East	Residential properties with gardens and commercial properties (restaurant with a cellar 20m, driving school 15m and small retail units with residential properties above 25m northeast). Colham Green Recreation Grounds 50m.
West	Residential properties with gardens beyond Royal Lane.

2.2 Development Proposal

The proposals seek to make optimal use of the land through the comprehensive redevelopment of the Hillingdon Hospital Site to deliver a hospital that has been designed to improve the experience of patients and staff.

The Trust have outlined that at the heart of the proposals, is a shared vision of providing improved access to better healthcare services for our population in a new fit for purpose local hospital on the Hillingdon Hospital site. The Trust, working with partners across the community, seek to improve care and help avoid unnecessary hospital stays. The strategy targets improvements through collaboration, integration and greater efficiency.

The Trust plan to provide the same range of services that are currently available at the hospital, but in a high quality, purpose-built facility. In designing the new facility, the Trust seek to work with our partners across the health and social care system to improve the integration of care across the borough and beyond.

There is undoubtedly a need for a new hospital in Hillingdon, given that the life of the Hillingdon Hospital estate has largely expired. The optimisation of the existing hospital site through the construction of a new hospital on the western extent of the site will allow the rest of the site to be cleared for other land uses such as residential in line with the thrust and intent of local, regional and national planning policies.

Detailed planning application:

- Replacement hospital building (79,603.6 sqm Gross Internal Area (GIA)) of basement, ground plus seven storeys on the western extent of the site incorporating a linked mobility hub and multi storey car park (MSCP) for 781 car spaces;
- Proposed hospital GIA = 79,603.6sqm
- Proposed MSCP GIA = 23,034sqm
- Proposed total GIA (combined) = 102,637.6sqm
- High quality landscaping buffer fronting Royal Lane;
- New bus stop arrangements and improved connections to the hospital on Pield Heath Road;
- Large central green open space for use by the hospital and wider community;
- 161 surface level car parking spaces with the ability to cater for up to 14,000 sqm of expansion space for future hospital expansion (if required).

Outline planning application is being sought for the wider masterplan comprising the following proposals:

- Up to 33,870 sqm of residential, comprising 327 dwellings;
- Plots – P01, P02, P04 (mixed use blocks with supporting provision of 800sqm of town centre uses (Use Class E) at ground floor level).
- Up to 302 car parking spaces, and 515 cycle parking spaces.
- Improved permeability and public access routes through the site;

- High quality public realm and landscaped gardens throughout the site.

2.3 Surface flow and flooding

The council has produced a Strategic Flood Risk Assessment as part of the Local Plan Part 1. The Strategic Flood Risk Assessment incorporates the floodplain maps produced by the Environment Agency, which show the Flood Zones relevant to the Site and surrounding areas. The council requires that developments within Flood Zones 2 or 3 provide evidence of the Sequential Test outlined in the National Planning Policy Framework, and developments in Flood Zones 2, 3a or 3b, or greater than 1ha be accompanied with a Flood Risk Assessment. The floodplain maps show the Site is in Flood Zone 1, however being larger than 1ha a Flood Risk Assessment is required and is currently being undertaken.

As part of the proposed site drainage, surface water flows arising from the proposed development will not be materially changed from the existing route. The proposed basement development is also not expected to result in a change in the proportion of hard surfaced/paved external areas.

The proposed basement is not expected to result in changes to the profile of the inflows of surface water being received by adjacent properties or downstream watercourses and there will be no change in the quality of surface water being discharged from the site.

2.4 Subterranean (Groundwater) Flow

The Site is underlain by a Secondary A Aquifer (Boyn Hill Gravels) and the proposed basement is expected to extend beneath the water table surface. The proposed basement will be constructed within the Made Ground and Boyn Hill Gravels, and within the top metres of the London Clay Formation. Groundwater monitoring carried out as part of the recent site-specific ground investigation (GI) has shown the groundwater level to be near the surface.

The nearest identified surface watercourse/feature is an unnamed ordinary watercourse located within the south-eastern boundary of the Site. No other watercourses, wells of potential spring lines are within 100m of the site.

The proposed basement development is not expected to result in a change in the proportion of hard surface/paved areas. The external areas of the existing site are predominantly hard surface/paved and the new development including the basement is expected to maintain this proportion. As part of the site drainage, it is not expected that more surface water than at present will be discharged to the ground. The surface water drainage strategy does not utilise infiltration features (e.g. soakaways and/or SUDS) as part of the design.

2.5 Slope Stability

The Hillingdon Local Plan did not specify any particular criteria regarding slope stability, however the findings of the Groundsure report indicate that the hazard rating for landslides to occur within 50m of the Site is very low as slope instability problems are not likely to occur. Despite this, consideration should still be given to adjacent areas which may impact on the Site.The topography of the existing site is generally flat with no slopes (either natural or man-made) greater than 7º (approximately 1 in 8). The proposed development will not result in slopes greater than 7º.

The shallowest stratum on the site is Made Ground, underlain by Boyn Hill Gravels, underlain by London Clay Formation. Some trees currently within the site area will be felled as part of the proposed basement excavation.

3 Scoping

3.1 Published Geological Data

The published 1:50,000 scale geological map of the area produced by the British Geological Survey (BGS Sheet 255, “Beaconsfield”, 2005) indicates the Site is underlain by the following geological succession:

Table 3-1: Geological Succession from Published Mapping

Age	Geological Stratum
Quaternary	Boyn Hill Gravel Member
Paleogene	London Clay Formation
	Lambeth Group
Cretaceous	Seaford Chalk Formation and Newhaven Chalk Formation (Undifferentiated)

3.1.1 Made Ground

Made Ground was recorded in one historic borehole log to a depth of 0.46mbgl but the ground conditions would have changed due to recent hospital development; Made Ground (including engineering fill and hardstanding) is thus likely to be more extensive.

3.1.2 Boyn Hill Gravel Member

This gravel deposit is formed from river terrace deposits of the post-diversionary River Thames and its tributaries and is described in the British Geological Survey (BGS), Lexicon of Named Rock Units: “Sand and gravel, with possible lenses of silt, clay or peat. Poorly sorted, stratified gravel and locally tabular cross-bedded sand beds. Gravel assemblage is characterised by abundant angular flint (77-81%), sparse rounded flint (5-10%), sparse vein quartz (4-7%), sparse quartzite (1.5-5%), sparse Greensand chert (2.5-4%) and less than 1% of other types.”. The BGS notes the deposit can be up to 9m thick, average 5m.

3.1.3 London Clay Formation

The London Clay Formation is typically a firm to stiff to very stiff to hard, fissured grey to blue-grey over-consolidated clay, which, at outcrop, becomes firm, brown weathered clay typically within the upper 5m of the stratum. The Formation often becomes sandy to very sandy towards its base with associated high content of glauconite mineral and occasionally bands of laterally extensive imbricated cobbles and boulders of claystone (argillaceous limestone concretions). Occasional bands of sand and gravel dispersed with crystals of selenite (gypsum) and pyrite, which are sulphate sources, are also present. The thickness of the London Clay in the area is expected to be approximately 30m according to historical ground investigations. The underlying Harwich Formation refers to all sediments between the Lambeth Group and the London Clay Formation, typically comprising sand, clayey fine-grained sand and pebble beds. According to the BGS Memoir Geology of London, the thickness of the Harwich Formation can potentially be up to 2m at the Site though historical ground investigation findings have not recorded its presence.

3.1.4 Lambeth Group

The Lambeth Group comprises strata from the Woolwich, Reading and Upnor Formations. The group comprises laguno-marine sediments that have been deposited in an embayment of a deep marine water basin with brackish water lagoons, barrier beaches and alluvial plains. It is described as mottled clay with sand and pebble beds. The top of the Lambeth Group is marked by the eroded or inter-burrowed surface at the base of the Thames Group (London Clay Formation and Harwich Formation). The thickness of the Lambeth Group in the area is expected to be at least 20m, according to the BGS records for the historical boreholes close to the site.

3.1.5 Seaford Chalk Formation and Newhaven Chalk Formation

This is a sub-formation of the White Chalk group which the BGS, Lexicon of Named Rock Units describes as: Chalk with flints. With discrete marl seams, nodular chalk, sponge-rich and flint seams throughout. Typology of flints and incidence of marl seams is important for correlation.

3.1.6 Geological Features

The Groundsure report records no faults within 500m of the site based on BGS maps.

3.2 Scoping Output

The proposed development consists of demolishing an existing building on-site and erecting a new building in its place, as well as excavating in order to construct a new single-level basement beneath a portion of the building. The unloading and reloading of the Site, which is as a result of the demolition, excavation and construction works, result in vertical and horizontal ground movements that have the potential of causing damage to nearby buildings. In order to proceed with the development, the local council requires an assessment of the works on the surrounding area. This assessment is presented in the form of a Basement Impact Assessment and must show that the development does not adversely affect the structural stability or water environment of the local area.

The initial screening mentioned in the previous section highlights that a watercourse flows in a south-westerly direction in the southeast of the Site – undertaking a Basement Impact Assessment will assess in some detail whether the development will adversely affect water in the local area. In addition to this, the initial screening made note of an ambulance station situated immediately southwest of the proposed basement. A Basement Impact Assessment is required to estimate the potential structural damage to this building. No other structures have been identified in the vicinity of the Site that may be affected by the proposed works. A number of buildings exist to the east of the proposed building but these are envisaged to be demolished during the full site redevelopment. Nevertheless, a preliminary check was carried out to determine whether these structures are within the influence zone of the basement works. The influence zone was determined to be 36.6m after taking the greater value between 2 times the Wall Depth and 4 times the Excavation Depth. It was found that most of the buildings to the east are outside the zone of influence. The Tower Block High Rise and Nightingale Centre (AMU) lie marginally within the zone of influence, but for the most part they are also sufficiently far from the basement to conclude that there will be no major impact on them due to the proposed works.

The damage classification adopted is based on the method proposed by Burland et al. (1977). which is detailed in Section 5.3.3. The current assessment has been undertaken to assess the influence of excavation-induced ground movements based on analyses carried out using Oasys PDisp, Oasys XDisp and Geosolve WALLAP; movements due to demolition and construction are yet to be assessed. The assessment follows the general principles of the Building Damage Assessment procedure in accordance with CIRIA document C760 *Guidance on Embedded Retaining Wall Design*.

4 Site Investigation and Study

4.1 Historical Exploratory Hole Records

The British Geological Survey holds an archive of historical borehole logs throughout the UK. AECOM has searched the database for any records which would provide useful information on the ground profile at the site and a summary of these is given in Table 4-1. Copies of the logs are included as Appendix B.

Table 4-1: Historical Exploratory Holes in BGS Archive

Borehole reference NGR[1] Distance from the site Date	Stratum[2]	Description	Depth to Top of Stratum (mbgl)	Level of Top of Stratum (mOD)	Thickness (m)
TQ08SE1 [1] 506830, 181860 On Site June 1954	Made Ground	Made Ground (Topsoil and Brick Rubble)	G.L. [3]	-	0.46
	Boyn Hill Gravels	Sandy mottled Clay and stones	0.46	-	1.07
		Sand and Gravel with Clay content	1.52	-	0.61
		Gravel and Sand	2.13	-	2.59
		Sandy brown Clay and stones	4.72	-	0.30
		Gravel	5.03	-	0.61
		Brown Clay and stones	5.64	-	0.23
	London Clay	Firm blue Clay	5.87	-	BNP[4]
TQ08SE1 [2] 506830, 181860 On Site June 1954	Topsoil	Topsoil	G.L.		0.91
	Boyn Hill Gravels	Brown mottled Clay	0.91	-	1.52
		Gravel and Sand with Clay content	2.44	-	0.61
		Sandy brown Clay	3.05	-	0.30
		Gravel and Sand with Clay content	3.35	-	0.61
		Sandy brown Clay	3.96	-	1.07
		Gravel and Sand	5.03	-	1.07
		Brown Clay	6.10	-	0.15
	London Clay	Firm blue Clay	6.25	-	BNP
TQ08SE1 [3] 506830, 181860 On Site June 1954	Topsoil	Topsoil	G.L.	-	0.15
	Boyn Hill Gravels	Clayey Sand and Gravel	0.15	-	0.76
		Mottled Clay	0.91	-	1.22
		Gravel and Sand	2.13	-	1.68
		Brown Clay	3.81	-	0.61
	London Clay	Firm blue Clay	4.42	-	BNP
TQ08SE1 [4] 506830, 181860 On Site	Topsoil	Topsoil	G.L.	-	0.15
	Boyn Hill Gravels	Clayey Sand and Gravel	0.15	-	0.61

Borehole reference NGR[1] Distance from the site Date	Stratum[2]	Description	Depth to Top of Stratum (mbgl)	Level of Top of Stratum (mOD)	Thickness (m)
June 1954		Brown mottled Clay	0.76	-	0.91
		Gravel and Sand	1.68	-	2.29
		Brown Clay	3.96	-	0.46
	London Clay	Firm blue Clay	4.42	-	2.21
		Claystone	6.63	-	0.23
		Firm blue Clay	6.86	-	BNP
TQ08SE1 [5] 506830, 181860 On Site June 1954	Topsoil	Topsoil	G.L.	-	0.15
		Topsoil and stones	0.15	-	0.76
	Boyn Hill Gravels	Mottled Clay and stones	0.91	-	1.22
		Gravel and Sand with Clay content	2.13	-	1.07
		Brown Clay	3.20	-	0.46
	London Clay	Firm blue Clay	3.66	-	BNP
TQ08SE1 [6] 506830, 181860 On Site December 1956	Topsoil	Topsoil and stoney Clay	G.L.	-	0.91
	Boyn Hill Gravels	Angular flint Gravel with some Sand	0.91	-	1.83
		Claybound Gravel and Sand	2.74	-	0.61
	London Clay	Stiff blue Clay	3.35	-	BNP
TQ08SE1 [7] 506830, 181860 On Site December 1956	Topsoil	Topsoil and stoney Clay	G.L.	-	0.46
	Boyn Hill Gravels	Brown mottled Clay	0.46	-	1.07
		Angular Gravel with some Sand	1.52	-	2.44
	London Clay	Stiff blue Clay	3.96	-	BNP
TQ08SE1 [8] 506830, 181860 On Site December 1956	Topsoil	Topsoil	G.L.	-	0.30
	Boyn Hill Gravels	Clay and flints	0.30	-	1.52
		Firm brown mottled Clay	1.83	-	2.74
	London Clay	Stiff blue Clay	4.57	-	BNP
TQ08SE1 [9] 506830, 181860 On Site December 1956	Topsoil	Topsoil	G.L.	-	0.30
	Boyn Hill Gravels	Brown Clay	0.30	-	1.52
		Angular flint Gravel	1.83	-	1.52
		Firm brown Clay	3.35	-	0.30
	London Clay	Stiff blue Clay	3.66	-	BNP
TQ08SE13 506940, 182020 ~ 80m NE Not known	Drift Gravel	Drift Gravel	G.L.	+43.00	3.66
	London Clay	Blue Clay	3.66	+39.34	11.89
		Blue Clay with small stones	15.55	+27.46	15.54

Borehole reference NGR[1] Distance from the site Date	Stratum[2]	Description	Depth to Top of Stratum (mbgl)	Level of Top of Stratum (mOD)	Thickness (m)
		Black Sand and pebbles (Basement-bed)	31.09	+11.91	0.91
		Stone (Basement-bed)	32.00	+11.00	0.30
	Lambeth Group	Blue veiny Clay	32.31	+10.69	1.22
		Blue veiny Clay	33.53	+9.47	1.22
		White marl	34.75	+8.25	0.30
		Yellow Clay	35.05	+7.95	6.40
		Sand	41.45	+1.55	0.15
		Brown Clay	41.61	+1.39	1.98
		Sand	43.59	-0.59	7.77
		Blue Clay	51.36	-8.36	1.07
		Black Clay	52.43	-9.43	0.76
		Black rock (? Flints)	53.19	-10.19	0.76
	Chalk	Grey Chalk	53.95	-10.95	7.16
		Chalk with a few small flints	61.11	-18.11	1.07
		Grey Chalk	62.18	-19.18	BNP
TQ08SE14 506960, 182070 ~ 130m NE 1889	River Drift	Loam	G.L.	+44.00	0.46
		Gravel	0.46	+43.54	4.57
	London Clay	Yellow Clay	5.03	+38.97	0.61
		Blue Clay	5.64	+38.36	6.71
		Claystone	12.34	+31.66	0.30
		Blue Clay	12.65	+31.35	20.27
		Black (flint) pebbles (Basement-bed)	32.92	+11.08	0.30
	Lambeth Group	Coloured (mottled) Clay	33.22	+10.78	10.67
		Brown Clay	43.89	+0.11	7.62
		Brown Sand	51.51	-7.51	9.14
		Blue Clay	60.66	-16.66	1.07
		Black peat (Clay?) and black pebbles	61.72	-17.72	0.91
	Chalk	Chalk	62.63	-18.64	BNP
TQ08SE15 506950, 182160 ~ 205m NE 1904-1927	Drift	Dug well	G.L.	+45.00	19.20
		Concrete	19.20	+25.80	0.61
	London Clay	Blue Clay and septeria	19.81	+25.19	13.72
	Lambeth Group	Mottled Clay	33.53	+11.47	9.14
		Brown Clay	42.67	+2.33	1.22

Borehole reference NGR[1] Distance from the site Date	Stratum[2]	Description	Depth to Top of Stratum (mbgl)	Level of Top of Stratum (mOD)	Thickness (m)
		Live brown Sand	43.89	+1.11	7.92
		Blue Clay	51.82	-6.82	1.07
		Dark Clay and pebbles	52.88	-7.88	0.76
	Chalk	Chalk and flints (with Sand from old borehole)	53.64	-8.64	5.79
		Chalk and flints	59.44	-14.44	39.62
		Chalk full of flints	99.06	-54.06	7.16
		Block Chalk and flints (very hard)	106.22	-61.22	6.10
		Chalk and flints	112.32	-67.32	12.19
		Block Chalk and flints	124.51	-79.51	1.52
		Grey Chalk	126.03	-81.03	1.52
		White Chalk with few flints	127.56	-82.56	6.55
		Hard Chalk with grey bands and few flints	134.11	-89.11	BNP

Notes:
[1] NGR refers to the National Grid Reference;
[2] The geological classification is based on information available on the logs and is therefore indicative only;
[3] G.L. is Ground Level;
[4] BNP denotes Base Not Proven.

4.2 Site-specific Ground Investigations

The findings of the first phase of site-specific ground investigations undertaken by SOCOTEC in 2021 have been incorporated in this report. The stratigraphy of the Site based on these findings is presented in Table 4-2. Figure 3 shows the locations of these ground investigations. The ground model used for the purpose of the Basement Impact Assessment is presented in Section 4.6. For further information regarding the site-specific SOCOTEC GI data, reference should be made to the SOCOTEC Factual Report (January 2022) and the AECOM Ground Investigation Report (January 2022).

Table 4-2: Site stratigraphy based on SOCOTEC GI 2021

Stratum	Depth to Top of Stratum (m bgl)	Elevation to Top of Stratum (m OD)	Proven Thickness (m)
Made Ground	0.0 to 0.5	+40.1 to +34.7	0.3 to 1.2
Boyn Hill Gravels	0.3 to 1.3	+38.5 to +34.0	0.5 to 4.2
London Clay Formation	3.7 to 4.9	+34.8 to +29.8	17.3 to 22.3
Harwich Formation	22.2 to 27.2	+13.0 to +12.5	0.8 to 3.1
Lambeth Group	25.2 to 28.7	+12.0 to +9.5	5.5 to 14.8

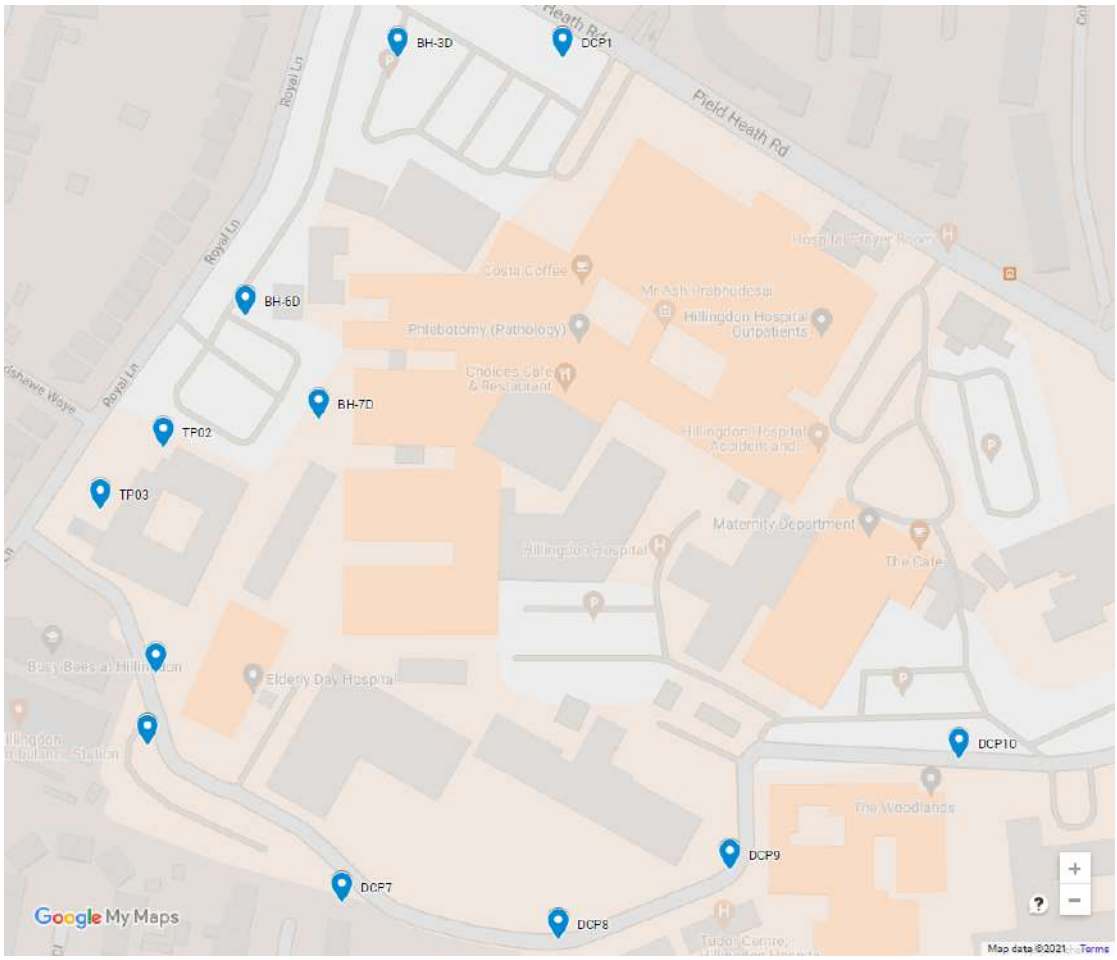

Figure 3: Plan View of Recent GI

4.3 Hydrogeology

4.3.1 Aquifer Classification

The EA's Groundwater Protection Policy adopts aquifer designations that are consistent with the Water Framework Directive. According to this system:

- The Boyn Hill Gravel Member is classified as a Secondary A Aquifer. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers
- The London Clay Formation is classified as an Unproductive Stratum. These are layers of rock or superficial deposits with low permeability or porosity that have a negligible significance for water supply.
- The Lambeth Group is classified as a Secondary A Aquifer.
- The Seaford and Newhaven Chalk Formation is classified as a Principal Aquifer. These are layers of rock or drift deposits that have high intergranular and/or fracture permeability, meaning they usually provide a high level of water storage and transmission. They may support water supply and/or river base flow on a strategic scale.

4.3.2 Vulnerability of Groundwater resources

According to the Groundsure Report, the Environment Agency's Combined Groundwater Vulnerability Map shows that the superficial deposits underlying the site have a high to medium vulnerability to pollution and are classed as 'Productive', while the London Clay bedrock is classified as 'Unproductive'.

In terms of identifying the risk of contamination from potential polluting activities in a given area to groundwater sources (wells, boreholes and springs) used for supplying public drinking water, the Environmental Agency (EA) identifies Source Protection Zones (SPZ). These show the extent of a groundwater source catchment and are divided into three zones, as follows:

- SPZ1 (Inner protection zone) is located immediately adjacent to the groundwater source. It is based on a 50-day travel time from any point below the water table and is designed to protect against the effects of human activity and biological/chemical contaminants that may have an immediate effect on the source. The zone has a minimum radius of 50m.
- SPZ2 (Outer protection zone) is larger than SPZ1 and is defined by a 400-day travel time from a point below the water table to the source. The travel time is designed to provide delay and attenuation of slowly degrading pollutants. This zone has a minimum radius of 250m or 500m, depending on the size of the abstraction.
- SPZ3 (Source catchment protection zone) covers the complete catchment area of a groundwater source.

The Groundsure Report indicates that the north of the Site falls within a SPZ1 and SPZ2, which is associated with a groundwater abstraction on-site at 506910N, 181930E and a groundwater abstraction 204m northeast of the Site at 506950N, 182160E, both of which are held by Hillingdon Hospital NHS Trust for commercial/industrial and public services (including drinking water use). However, information provided by the Trust indicates that the abstractions are not currently in use.

4.3.3 Site Groundwater Characteristics

Groundwater was struck in eight of the nine historic BGS boreholes drilled at the existing hospital Site (TQ08SE1) at between 0.79m and 2.28m below ground level, i.e. in the Boyn Hill Gravel formation. In three instances groundwater rose after being struck (rise of 0.18m, 0.56m and 0.8m) to between 1.12mbgl and 1.42mbgl, whilst in other cases there was no rise. Groundwater may therefore be present at shallow depths at the Site and may be encountered in excavations.

The recent SOCOTEC Ground Investigation identified two aquifers on site; an upper and lower aquifer. Groundwater is present in the surface superficial Boyn Hill Gravels, underlain by the low permeability London Clay. This is referred to as the ‘upper aquifer’. Groundwater is also present in granular units in the upper section of the Lambeth Group, in particular in the Channel Sands, which vary significantly in thickness and in lateral extent. The main water-bearing sequence below the site is known as the ‘lower aquifer’ and comprises the Chalk, and the overlying Thanet Sand Formation and the granular Upnor Formation, which is the basal unit of the Lambeth Group. The water depth in the upper aquifer was measured at 1.25mbgl to 4.24mbgl. The water depth in the lower aquifer was measured at 2.32mbgl to 14.2mbgl.

Based on the groundwater regime present at the Site, the groundwater table has been conservatively considered at 1.25mbgl (+36.25mOD) within the Made Ground with hydrostatic pressures assumed below this level. Allowing for seasonal variation, a groundwater level of +37.25mOD has been assumed in the geotechnical analyses for the Ultimate Limit States – this corresponds to approximately ground level. It is noted that groundwater levels can vary seasonally in response to extreme weather conditions as well as in response to leakage from water and drainage pipework.

4.3.4 Risk from Rising Groundwater Level in the Deep Aquifer

The site lies within the critical area in the London basin defined in CIRIA Special Publication SP69 (Simpson et al., 1989) in which exceptional structures are potentially at risk from the rising groundwater levels in the deep aquifer.

With reference to the Management of the London Basin Chalk Aquifer Status Report 2018, the estimated level of the potentiometric surface of the Basal Sands and Chalk aquifer in January 2018 was at approximately +25mOD, and the groundwater level remained the same between 2017 and 2018. These levels are in agreement with the lower piezometric levels recorded during the recent 2021 SOCOTEC GI (see section 4.3.3 above).

4.3.5 Groundwater abstractions

According to the Groundsure Report, there are 21no. recorded groundwater abstractions and 5no. abstractions for potable water supply within a 2km radius of the Site. The nearest licence is registered to Hillingdon Hospital NHS

Trust, which is situated on-site and used for commercial/industrial/public services including drinking water; information provided by the Trust indicates that the abstractions are not currently in use.

4.4 Hydrology

4.4.1 Surface water courses and drainage

The nearest identified Water Framework Directive (WFD) relevant surface watercourse/feature to the Site is the River Pinn, which is situated approximately 409m west of the Site and flows in a southerly direction. The Site is located within the Pinn WFD surface water body catchment. The nearest identified surface watercourse/feature, which is not governed by the WFD, is an unnamed inland river located within the south-eastern boundary of the Site and flowing in a south-westerly direction towards the River Pinn. The surface watercourse is culverted in places on-site. Another inland river is located approximately 130m northwest of the Site.

The River Thames is located approximately 9.2km southwest of the Site.

4.4.2 Surface Water abstractions

According to the Groundsure Report, there are 2no. records of licensed surface water abstractions within a 2km radius of the Site. The nearest licence is registered to Rigby located approximately 1742m west of the Site associated with hydroelectric power generation.

4.5 Flooding

4.5.1 Fluvial and Tidal Flooding

The Strategic Flood Risk Assessment (SFRA) and the Flood Map for Planning, published by the EA, state that the site is located within Flood Zone 1 which is defined as having an annual chance of flooding from fluvial and tidal sources as less than 0.1% (1 in 1000). However, based on the SFRA and on information recorded in the Groundsure Report (data taken from Ambiental Risk Analytics), along the south-eastern boundary there is a portion of the site that runs parallel with the unnamed surface watercourse located within Flood Zone 3b. Flood Zone 3b is defined as having an annual change of flooding from fluvial and tidal sources as 3.3% (1 in 30).
Planning Policy for Flood Risk

The National Planning Policy Framework (NPPF) for England requires local planning authorities to take account of flood risk and the implications of climate change. It requires that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.

Technical guidance on flood risk accompanies the NPPF and sets out how this policy should be implemented. It stipulates that development proposals in flood risk Zone 2 (medium probability), Zone 3a (high probability) and Zone 3b (the functional floodplain) should be accompanied by a site-specific flood risk assessment (FRA), which is in progress at the time of writing this report.

4.5.2 Surface Water Flooding

Surface water flooding typically occurs after periods of intense rainfall that is not able to infiltrate to the ground or enter a drainage system, which can result in localised flooding/ pooling of rainwater. The EA flooding map (included in the Groundsure Report in Appendix F) indicates the extents of potential surface water flooding at the site as follows:

- High risk flooding along the south-eastern boundary of the site occurs as a result of rainfall with a greater than 1 in 30 chance in any given year (annual probability of flooding of 3.3%);
- Medium risk flooding in the centre of the site occurs as a result of rainfall between 1 in 100 (1%) and 1 in 30 (3.3%) chance in any given year; and
- Low risk flooding along the western boundary of the site occurs as a result of rainfall between 1 in 1000 (0.1%) and 1 in 250 (0.4%) chance in any given year.

The flood risk from surface water is assessed to be medium.

4.5.3 Groundwater Flooding

There is a limited potential risk for groundwater flooding to occur at the Site based on information provided in the Groundsure Report, with the overall risk of groundwater flooding for the site being classified as Low. An area approximately 350m north of the Site has a moderate risk of groundwater flooding. However, due to the shallow depth of the groundwater table and the highly permeable superficial deposits, groundwater flood risk for the Site is classed as medium.

4.5.4 Impacts on the Aquifer

Construction of basements below groundwater level in aquifers has impacts on subterranean groundwater flow, which can affect groundwater levels in the vicinity of the basement and increase the risk of surface flooding or flooding of existing adjacent properties. The current proposal involves the construction of a new basement at approximately 6.1mbgl which corresponds to +31.40mOD.

Information from the SOCOTEC GI indicates that a shallow aquifer is present in the area, though the depth and thickness of this aquifer are somewhat variable. The recent ground investigation shows that the maximum groundwater level at the Site is 1.24mbgl, which is approximately 5m above the proposed excavation level. Groundwater appears to flow in a southerly direction. AECOM are presently not aware of any basements immediately north of the Site and therefore increased risk of flooding is not anticipated as a consequence of the proposed works.

4.6 Ground Model

Based on the findings of the recent ground investigations carried out on-site, a ground model for the purposes of the Basement Impact Assessment is presented in Table 4-3. The groundwater level was considered to be at +36.25mOD for the Serviceability Limit States. Ground level was determined using the site topographic survey undertaken by Land Utility Group (January 2021).

Table 4-3: Ground model based on SOCOTEC GI 2021

Stratum	Depth to Top of Stratum (m bgl)	Elevation to Top of Stratum (m OD)	Proven Thickness (m)
Made Ground	0.0	+37.5	1.2
Boyn Hill Gravels	1.2	+36.3	2.5
London Clay Formation	3.7	+33.8	21.8
Lambeth Group	25.5	+12.0	12.0

5 Impact Assessment

5.1 Removal of Trees

Based on the Arboricultural Impact Assessment Report included in Appendix C, there are 31no. trees located on site that will be removed as part of the proposed works. An assessment of the potential impact on the buildings in and around the Site has been undertaken for these trees in accordance with the National Building House Council (NHBC) Chapter 4.2, 2014.

This document identifies the zone of influence for a tree species based on its water demand and the height of the tree. With regards to the height of the tree, this document states that the height of the tree to be used to calculate this zone of influence should be the actual height of the tree up until it has achieved 50% of its mature height. At this point, the mature height of the tree should be used rather than the actual height. This document also identifies the depth to which adjacent foundations should be taken to avoid any adverse effects from a tree if it is within its zone of influence.

Table 5-1: Correlation between Water Demand and Zone of Influence of a Tree

Water Demand of Tree	Zone of Influence of Tree
High	1.25 x Height of Tree
Moderate	0.75 x Height of Tree
Low	0.50 x Height of Tree
For calculation of the zone of influence, the height of the tree should be taken as the mature height of the tree rather than its actual height once it has grown to 50% of its mature height.	

The zone of influence was calculated for each of these trees as can be seen in Table 5-2. The number of existing buildings situated within the zone of influence was also determined and documented. As is evident, no buildings will be affected due to the removal of these 31no. trees.

Table 5-2: Zone of influence of trees

Tree No	Species	Water Demand	Height (m)	Mature Height(m)	Zone of Influence (m)	No. of Buildings Affected
24	Sycamore	Moderate	10	22	7.5	0
96	Holly	Low	6	12	6	0
109	Mixed Broadleaves	High	9	10	12.5	0
128	Oak, English	High	22	20	27.5	0
129	Oak, English	High	22	20	27.5	0
130	Ash, Common	Moderate	23	23	17.25	0
136	Ash, Common	Moderate	10	23	7.5	0
137	Ash, Common	Moderate	9	23	6.75	0
138	Ash, Common	Moderate	10	23	7.5	0
139	Ash, Common	Moderate	12	23	17.25	0
141	Maple, Norway	Moderate	8	18	6	0
143	Oak, English	High	10	20	25	0
144	Ash, Common	Moderate	10	23	7.5	0
145	Alder, Common	Moderate	10	18	13.5	0
146	Alder, Common	Moderate	12	18	13.5	0
147	Ash, Common	Moderate	11	23	8.25	0
148	Ash, Common	Moderate	9	23	6.75	0
149	Alder, Common	Moderate	12	18	13.5	0
150	Lime, Common	Moderate	13	22	16.5	0
160	Cherry, Wild (Gean)	Moderate	9	17	12.75	0
162	Birch, Silver	Low	5	14	2.5	0
163	Cherry, Wild (Gean)	Moderate	8	17	6	0
164	Cherry, Wild (Gean)	Moderate	7	17	5.25	0
165	Plum, Purple	Moderate	6	10	7.5	0
167	Birch, Silver	Low	9	14	7	0
168	Cypress, Lawson	High	10	18	22.5	0
169	Cypress, Leyland	High	10	20	25	0
170	Birch, Silver	Low	9	14	7	0
171	Birch, Silver	Low	9	14	7	0
172	Birch, Silver	Low	11	14	7	0
173	Birch, Silver	Low	7	14	7	0

Tree identification numbers taken from Arboricultural Impact Assessment Report produced by Landmark Trees.
Zone of influence determined using Table 5-1.
Tree 109 consisted of a group of trees which included Ash and Hawthorn – the worst case scenario has been used in the calculation.
Tree 143 consisted of a group of trees comprising 3 Oak trees.

5.2 Ground Movement Assessment

5.2.1 Details of Proposed Development

The development proposal is discussed in Section 2.2.

5.2.2 Proposed Construction Sequence

At the time of writing the design process is at an outline stage for planning purposes. The following 'bottom up' construction sequence (i.e. excavate and brace, then construct from the bottom of the excavation upwards) is assumed in this assessment.

A summary of the proposed construction sequence for the secant piled wall is presented below:

- Demolition of the existing structures on site and remove car park hardstanding;
- Formation of the perimeter secant bored pile wall with 600mm diameter piles spaced at 900mm from ground level (approximately +37.50mOD);
- Excavation to +34.90mOD;
- Installation of temporary propping at +35.80mOD;
- Excavation to basement level (approximately +31.40mOD);
- Installation of bearing piles using CFA or rotary bored techniques;
- Casting pile caps and basement insitu RC slab at +31.96mOD (centreline);
- Casting of ground floor insitu RC slab at +36.90mOD (centreline);
- Removal of temporary propping;
- Construction of superstructure.

The basement is likely to have temporary groundwater control measures in the form of sumps and pumping to collect any groundwater seeping through the perimeter wall and the base of the excavation. Any groundwater flow is likely to be relatively slow through the impermeable London Clay Formation.

The proposed development and sequence of construction provided above is considered appropriate for the ground conditions discussed in Section 4.

No external future developments have been considered in this assessment. Any demolition, excavation or construction in the vicinity of the site could have an impact on the accuracy of this assessment.

The assumed construction sequence should be verified once the design further progresses. Should the above assumptions no longer be valid, the analyses presented herein shall be revised and the present report shall be updated to reflect these changes.

5.2.3 Sources of Ground Movement

The ground beneath and adjacent to the proposed development will undergo a series of stress changes resulting from demolition of existing building, installation of the perimeter wall, excavation to the new formation level and reloading with the proposed new building loads. **The impact of demolition and reloading has not been considered in the present analysis in absence of information.** However, the proposed development will be supported on piled foundations and therefore it is unlikely to cause impact on adjacent properties. These stress changes will result in short term (undrained soil behaviour) 'elastic' movement of the ground and in long term (drained soil behaviour) 'consolidation' and/or 'swelling' movement associated with changes in pore water pressure and effective stress in the ground. The assessment follows the general principles of the building damage assessment procedure in accordance with CIRIA C760.

The following ground movements have been assessed in the present analysis:

- Movements due to wall installation in accordance with CIRIA 760 recommendations for secant pile wall
- Movements due to embedded wall deflection due to excavation in front of the wall, in accordance with CIRIA C760 recommendations, using WALLAP by Geosolve

- Movements due to vertical unloading, resulting from unloading following excavation to the new formation level using PDisp by Oasys

5.2.4 Movements due to Wall Installation

Ground movements will take place as a result of the installation of the secant bored pile wall. CIRIA Report C760 Guidance on Embedded Retaining Wall Design provides empirical data for the profiles of the ground movements (horizontal and vertical) behind the retaining wall due to installation. These movements are a function of wall depth and wall stiffness and are commonly used in practice. Ground surface vertical and horizontal movements at the back of the secant retaining wall, arising from installation of the wall, have been estimated in accordance with CIRIA C760 recommendations.

The ground surface movement curves used in the analysis are as follows:

- Installation of secant pile wall in stiff clay (CIRIA C760 Fig 6.8(a) and (b) for horizontal and vertical movements respectively) (Figure 4)

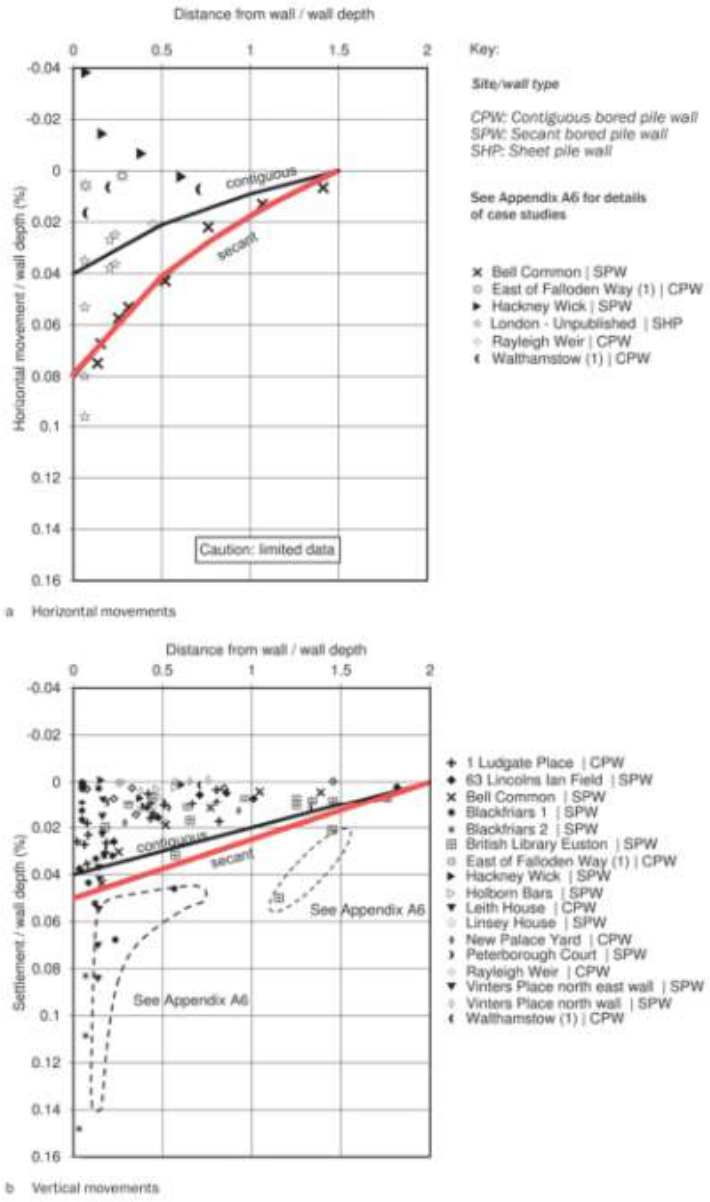

Figure 4: Ground surface movements due to bored pile installation in stiff clay (normalised) (CIRIA C760 Figure 6.8 (a) & (b))

5.2.5 Movements due to Excavation in front of Embedded Wall

5.2.5.1 Ground Model and Geotechnical Parameters

The ground model adopted for the retaining wall analysis is presented in Table 4-3 in Section 4.6.

On site BGS borehole records and recent ground investigations by SOCOTEC in 2021 encountered a variable thickness of Made Ground. The adopted thickness of Made Ground (1.2m) is considered representative in relation to the thickness of the layer across the site. Due to the absence of any available data, the soil parameters for the Made Ground were assumed based on log descriptions.

The Boyn Hill Gravels are generally recorded as being granular. The results of the SPT N_{60} values in the Boyn Hill Gravels based on the SOCOTEC 2021 ground investigation range from 12 to 176. The value taken for the purpose of the analyses is 20, which corresponds to an angle of shearing resistance value of 33° based on the relationship between $(N_1)_{60}$ values and angle of shearing resistance (Tomlinson, 2001).

The drained Young's modulus for Made Ground and Boyn Hill Gravels has been estimated from the relationship $E'=1000*N_{60}$ (CIRIA C143).

The undrained shear strength profile of the London Clay Formation is derived from correlation with SPT N values and laboratory triaxial testing, which show an increase in strength with depth. A design undrained shear strength profile of Cu = 70+3.5z kN/m^2 is adopted (where z=0 at the top of London Clay assumed at +33.8mOD).

The stiffness for the London Clay Formation for the retaining wall analyses has been estimated as $E_u=1000*Cu$ and $E'=800*Cu$ for the undrained and drained conditions respectively. These values are in accordance with the small strain range associated with retaining wall problems.

A total of 32no. plasticity index tests were undertaken on samples of the London Clay during the SOCOTEC 2021 ground investigation. Plasticity indices of 18% to 47% were recorded with an average of 36.4%. The characteristic constant volume effective angle of shearing resistance (ϕ'_{cv}) is calculated using the relationship to plasticity index given in BS8002:2015. For the plasticity indices recorded, ϕ'_{cv} varies between 21.1° and 26.3°, with an average of 22.5°. An effective angle of shearing resistance $\phi'_{cv}=22°$ and a drained cohesion (c') of 0kN/m^2 have been adopted for the London Clay.

Characteristic soil parameters used to assess the movements due to excavation in front of a retaining wall are summarised in Table 5-3; these differ from the parameters presented in the AECOM Ground Investigation Report (2022) as they correspond to the specific design requirements associated with the Basement Impact Assessment calculations.

Table 5-3: Summary of Characteristic Ground Parameters for WALLAP

Parameters		Stratum		
		Made Ground	Boyn Hill Gravels	London Clay
Angle of shearing resistance	ϕ' (°)	25	33	22
Drained cohesion	c' (kN/m^2)	-	-	0
Undrained shear strength	c_u (kN/m^2)	-	-	70 to 146
Bulk unit weight	γ_b (kN/m^3)	18	18	20
Young's modulus – undrained	E_u (kN/m^2)[1]	-	-	70000 to 146000
Poisson's ratio – undrained	v_u	-	-	0.5
Young's modulus – drained	E' (kN/m^2)[1]	10000	20000	56000 to 117040
Poisson's ratio – drained	v'	0.2	0.2	0.2
In situ earth pressure coefficient	K_0[2]	0.58	0.46	1.5
Notes:				

[1] Stiffness of London Clay for PDisp analysis was assumed equal to Eu=400Cu and E'=260Cu, considered appropriate for the strain levels associated with heave due to excavation unloading.
[2] In accordance with guidance in CIRIA C760, K_0=1.5 for over-consolidated clays and K_0=(1–sinϕ′) for normally consolidated clays, sands and gravels.

5.2.5.2 Vertical and Horizontal Movements

Ground movements behind the retaining wall will occur as a result of the excavation at the front of the wall. In order to assess these movements, soil-structure-interaction (SSI) analysis was undertaken using WALLAP by Geosolve. The computed horizontal deflections of the wall were used to estimate ground movements at the back of the wall (vertical and horizontal) due to excavation, in accordance with guidance in C760. The CIRIA guidance suggests that the vertical movement trough at the back of the wall for excavations within the London Clay is equal to half the rotated horizontal deflection profile of the wall (Figure 5). For the horizontal movements, C760 suggests using the empirical graph shown in Figure 6. The range over which the horizontal movements become negligible was taken from the graph, whilst the maximum horizontal deflection was capped based on computed deflections at the top of the wall from WALLAP.

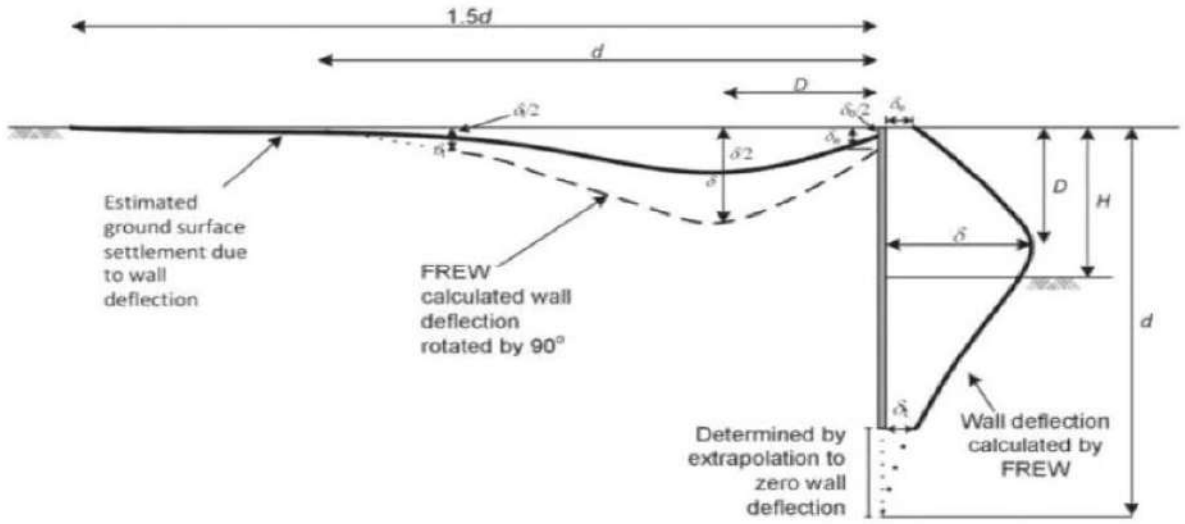

Figure 5: Relationship between analysed lateral (propped) wall deflections and predicted ground surface settlements in stiff ground (CIRIA C760 Figure 6.17)

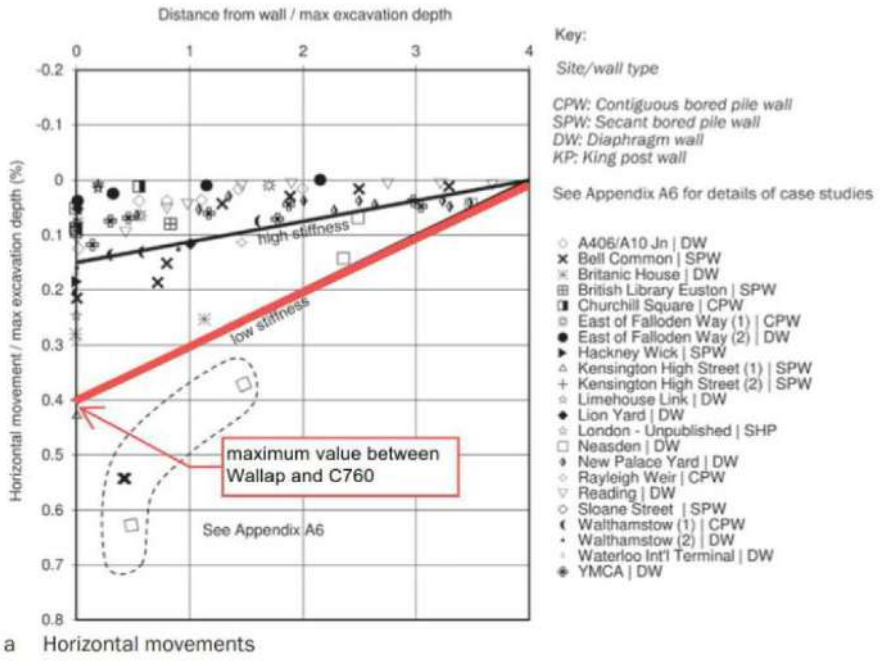

Figure 6: Ground surface movements due to excavation in front of wall embedded in stiff clay (CIRIA C760 Figure 6.15)

5.2.5.3 Wall Details

The wall parameters used in the analysis were determined using the guidance in CIRIA C760 and assuming spacing of 900mm for the 600mm diameter secant piled wall.

5.2.5.4 Propping Details

Propping details are unknown at the time of writing this report. Therefore, the temporary restraint system has been modelled to target an assumed stiffness of 40,000 kN/m/m.

Permanent restraint to the basement retaining walls will be formed by the structural slabs at basement and ground floor levels. Long-term concrete stiffness equal to 50% of the E_0 uncracked stiffness has been considered for the slabs.

5.2.5.5 Results

The deflection profiles of the wall section were estimated for both short- and long-term conditions using WALLAP, showing maximum deflections of 10mm that occur approximately at 2m below ground level. The detailed results are presented in Appendix D.

5.2.6 Movements due to Vertical Unloading

Vertical ground movements resulting from unloading following excavation to the new formation level have been assessed using PDisp by Oasys (version 20.0). The Boussinesq method of movement calculations has been adopted, with which PDisp calculates the displacements within a linear elastic or non-linear soil mass as a result of uniform normal or tangential pressure being applied to polygonal and circular loaded planes. When calculating stress changes within the soil, the program assumes the soil is an elastic half-space.

The following two ground movement analyses have been undertaken:

- Undrained analysis accounting for excavation unloading
- Drained analysis accounting for excavation unloading

It should be noted that the recorded movements within the basement excavation will be different than the ones predicted from the PDisp analyses as the short-term heave will be removed before casting the slab. Furthermore,

the estimated movements refer to 'greenfield' conditions, assuming that they are not affected by overlying or adjacent structures. Therefore, the actual movements are likely to be less than the predicted values.

5.3 Structural Assessment of Ground Movement

5.3.1 Introduction

This section provides an engineering interpretation of the impact of the development on the Hillingdon Ambulance Station located southwest of the Site, i.e. the building lying within the zone of influence of the proposed basement works and therefore likely to be affected.

5.3.2 Condition Surveys

Condition surveys are recommended to be carried out on the Ambulance Station in order to identify any existing defects prior to the commencement of the works. These records will be used to help identify any changes to the conditions of the structure that might occur as a direct result of the proposed development.

During the construction works the movement of the basement walls is recommended to be monitored. This monitoring should be undertaken on a regular basis at a number of monitoring points to record the lateral movement of the retaining wall.The monitoring results will then be compared against the predicted lateral movements of the walls. If movements measured are found to be approaching the predicted lateral movement, then the frequency of the monitoring should be increased for the section of the retaining wall concerned. If the movements measured are found to be in excess of the predicted lateral movement then works around that area should stop until the cause of this movement has been established and any necessary remedial actions are taken.

5.3.3 Building Damage Assessment

5.3.3.1 Classification of Damage

An assessment of the potential damage to neighbouring structures immediately around the proposed basement has been undertaken. The assessment methodology for buildings adopted looks at the likely risk of damage to the structure. The degree of damage is generally categorised into three progressive levels:

- Visual appearance or aesthetics
- Serviceability or function
- Stability

As the ground movements beneath the foundations of the structure increase the damage to the building will move through these three categories. Burland et al. (1977) defined the classification of visible damage. In addition, further work by Boscardin and Cording (1989) introduced the concept of limiting tensile strain. As a result, the categories of damage identified by Burland et al. (1977) have been related to ranges of limiting tensile strain. Table 5-4 summarises the categories of damage identified by Burland et al. (1977) and the relevant limiting tensile strains. In the table categories 0, 1 and 2 relate to aesthetic damage, categories 3 and 4 relate to serviceability damage and category 5 relates to stability damage.

Table 5-4: Classification of Visible Damage to Walls

Damage Category	Normal Degree of Severity	Description of Typical Damage (Ease of Repair in Bold Type)	Limiting Tensile Strain ε_{lim} (%)
0	Negligible	Hairline cracks less than about 0.1mm wide	0-0.05
1	Very slight	Fine cracks that are easily treated during normal decoration. Damage generally restricted to internal wall finishes. Close inspection may reveal some cracks in external brickwork or masonry. Typical crack widths up to 1mm.	0.05-0.075
2	Slight	Cracks easily filled. Redecoration probably required. Recurrent cracks can be masked by suitable linings. Cracks may be visible externally and some repointing may be required to ensure weather tightness. Doors and windows may stick slightly. Typical crack widths up to 5mm.	0.075-0.15

3	Moderate	The cracks require some opening up and can be patched by a mason. Repainting of external brickwork and possibly a small amount of brickwork to be replaced. Doors and windows sticking. Service pipes may fracture. Weather tightness often impaired. Typical crack widths are 5-15mm or several >3mm.	0.15-0.3
4	Severe	Extensive repair work involving breaking out and replacing sections of walls, especially over doors and windows. Windows and door frames distorted, floor sloping noticeably. Walls leaning of bulging noticeably, some loss of bearing in beams. Service pipes disrupted. Typical crack widths are 15-25mm, but also depends on the number of cracks.	>0.3
5	Very severe	This requires a major repair job involving partial or complete rebuilding. Beams lose bearing, walls lean badly and require shoring. Windows broken with distortion. Danger of instability. Typical crack widths are greater than 25mm but depends on the number of cracks.	-

The categories of damage given above and the limiting tensile strains suggested by the published literature are based solely on masonry structures. Where a different structural type is present the limiting tensile strains and categories of damage are not directly applicable and may be generally considered conservative. However, in the absence of suitable alternative screening criteria, the assessment methodology based on masonry structures may be used for non-masonry buildings in conjunction with engineering judgement. The London Borough of Hillingdon does not specify the damage category which is considered acceptable, but movements resulting in Category 2 damage or less are generally considered to be tolerable and this is the assumption this assessment will follow.

5.3.3.2 Basis of Building Damage Assessment

The Building Damage Assessment uses the work described in Burland et al. (2001) and Gaba et al. (2003). In this approach the façade of the building is represented by a simple beam whose foundations are assumed to follow the displacement of the ground in accordance with 'greenfield' site assumptions. The maximum tensile strains are then calculated using pairs of equations that consider combinations of horizontal strain, bending strain and diagonal strain.

The assessment at this stage should be considered as preliminary and the results are likely to be conservative. **Consequently, the categories of damage derived in this level of assessment are only possible degrees of damage. The actual damage should be less than the predicted level of damage.** The reason for this is that the stiffness of the building will be such that the foundations will interact with the supporting ground and tend to reduce both the deflection ratio and the horizontal strains.

5.3.3.3 Calculations

The Hillingdon Ambulance Station located southwest of the Site has been considered in this assessment. Assumptions made in the calculation relating to the structure are listed below in Table 5-5.

Table 5-5: Summary of Building Damage Assessment Walls

Structure Reference	Structure Width/Length perpendicular to Wall (m)	Structure Height (m)
Left Wall	10.52	4.70
Back Wall 1	27.74	4.70
Back Wall 2	27.74	7.700
Right Wall	18.81	7.7

Notes:

1. It should be noted that the heights of the building's walls were estimated through a visual inspection using Google Maps, assuming a brick height of 75mm and 10mm of mortar between each brick.

2. Back Wall 1 refers to the portion of the wall joined to the western Wall; Back Wall 2 refers to the portion of the wall joined to the eastern Wall.

The calculations undertaken are based on the procedure presented by Burland et al. (2001). For each of the walls considered in this assessment the resultant tensile strain has been calculated. The calculations use the following four equations:

$$\frac{\Delta}{L} = \left(1 + \frac{HL^2}{18I}\frac{G}{E}\right)\epsilon_d$$

$$\frac{\Delta}{L} = \left(\frac{L}{12t} + \frac{3I}{2tLH}\frac{E}{G}\right)\epsilon_b$$

$$\epsilon_{bt} = \epsilon_h + \epsilon_b$$

$$\epsilon_{dt} = 0.35\,\epsilon_h + \sqrt{(0.65\,\epsilon_h)^2 + {\epsilon_d}^2}$$

Where:

Δ = deflection from straight line settlement
H = height of the building
L = length of the building (but limited by any point of inflexion)
E = Young's modulus of building
G = shear modulus of building
I = second moment of area (= $H^3/12$ in the sagging zone and $H^3/3$ in the hogging zone)
t = the furthest distance from the neutral axis to edge of 'beam' (= H/2 in the sagging zone and H in the hogging zone)
ε_b = maximum bending strain
ε_d = maximum diagonal strain
ε_h = maximum horizontal strain
ε_{bt} = total bending strain
ε_{dt} = total diagonal strain

5.3.3.4 Results

The results for the short- and long-term cases are summarised in Table 5-6 below.

Table 5-6: Building Damage Assessment Results

Wall Ref.	Loading Case	Damage Category*
Left Wall	Undrained	0 – Negligible
	Drained	0 – Negligible
Back Wall 1	Undrained	0 – Negligible
	Drained	0 – Negligible
Back Wall 2	Undrained	0 – Negligible
	Drained	0 – Negligible
Right Wall	Undrained	0 – Negligible
	Drained	0 – Negligible

* Due to negligible movements, no sagging or hogging zones were identified in the Building Damage Assessment

5.4 Conclusions

A Basement Impact Assessment has been undertaken for the proposed development of the Site known as Hillingdon Hospital. This has included calculations of predicted ground movements and an assessment of the structural impact on the surrounding buildings that may be affected.

Calculations have been undertaken to assess the potential impact on the Hillingdon Ambulance Station. Ground movements used in the damage assessment are based on the deflection profile of the retaining wall predicted by analysis software and the recommendations of CIRIA 760. The calculations have been carried out assuming a 'bottom up' construction sequence (low stiffness support system) of secant hard-firm piled wall.

The Building Damage Assessment was undertaken based on the method proposed by Burland et al. (2001) in which the impact of the excavation on the adjacent Hillingdon Ambulance Station was analysed. The analyses showed that the excavation would result in insignificant ground movements due to which the damage imposed on the Station is negligible.

The results of the Basement Impact Assessment are in compliance with Local Plan policies and meet London Borough of Hillingdon's requirements.

6 Recommendations for Further Work

6.1 Detailed Design Assessment

The current assessment has taken account of the impact of the proposed excavation on any neighbouring buildings. As the design progresses, the impact of demolition unloading and reloading due to the proposed development will need to be assessed. This will be analysed in later revisions of this Basement Impact Assessment report as the relevant details are made available.

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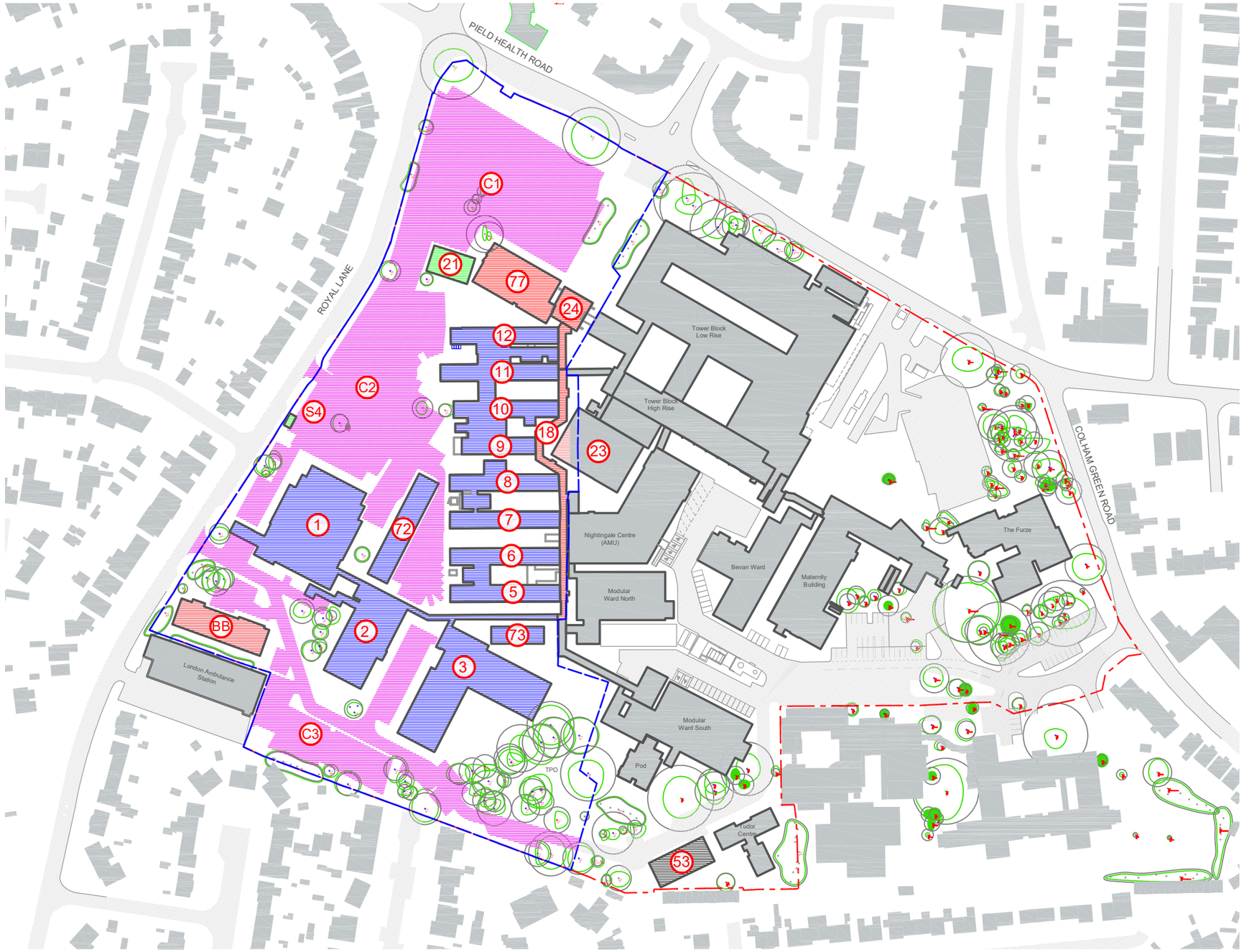
Appendix A – Latest Site Demolition Plan



Key to Demolitions:

*date in brackets is earliest date for start of soft strip out and surveys

1. Alderbourne Unit (Aug 22)
2. Geriatic Day Hospital (Sep 22)
3. Beaconsfield (Sep 22)
5. Quebec ward (Sep 22)
6. Pinewood ward (Jun 22) (covid dependant vaccination hub)
7. Osterley ward (Jun 22)
8. Churchill ward (Aug 22)
9. Middlesex ward (Jun 22)
10. Lister ward (Sep 22)
11. Pagett ward (Jul 22)
12. Diabetic care unit (Jul 22)
18. Annex corridor (partial only - refer to architect's drawings)
21. High voltage switch gear and plant room (Oct 22)
23. Catering / main restaurant (partial to allow for straightening of annex corridor)
24. Podium / Sewage pump / CHP (Jun 22)
53. Old creche (services diversions only Jan 22)
72. Greenacres (Sep 22)
73. Adult audiology (Sept 22)
77. Education & Training (Oct 22)
BB. Busy Bees (Oct 22)
S4. Substation 4
C1. Car park 1 (Jan 23 TBC)
C2. Car park 2 (Jan 23 TBC)
C3. Car park 3 (Jan 23 TBC)

Key to Demolitions Phasing:

- Pre-demolition services diversions
- Phase 1 (start Sept 22)
- Phase 2 (start Oct 22)
- Phase 3 (start Jan 23 TBC)
- Phase 4 (Mar 2023)
- Trust ownership boundary
- Demolitions site hoarding boundary

REV	DATE	BY	DESCRIPTION
P02	09/12/2021	TS	Updated phasing

CLIENT: THE HILLINGDON HOSPITALS NHS FOUNDATION TRUST

PROJECT: DEMOLITION & SERVICES DIVERSION
THE HILLINGDON HOSPITAL
UB8 3NN

NORTHMORES
22-24 Hills Road, Cambridge. CB2 1JP
Tel: 01223 327232
mail@northmores.com

DRAWING TITLE: Proposed demolition phasing plan

SCALE:	DATE:	DRAWN:
1:2000 @ A3	06/12//2021	TS

CHECKED:	APPROVED:

DRAWING NUMBER: THHR-NOR-XX-XX-D-0001
REVISION: P02

Appendix B – Historical BGS BH Logs

1 A. (Pages. 1-9.)

TQ 08 SE/1A
1 255
Middx 6" 14 NE/L
BH. A. 0683 8186

GROUND EXPLORATIONS LIMITED

BOREHOLE SECTION SHEET

Date June, 1954.

CONTRACT NAME Hillingdon Hospital. ORDER No.

Bored for : Messrs. Andrews, Kent & Stone.

Address : 60-66, Wardour Street, London, W.1.

Address of Site : Hospital Grounds.

District or Town : Hillingdon. County : Middlesex

Standing Water Level : 4'9" Below Surface : Dia. of Borehole : 6 Inches.

Water Struck (1) 9'0" (2) (3)

Boring Commenced : 1.6.54. Boring Completed : 3.6.54.

Special Remarks :

Jar Samples : 6243-1'0"; 6244-2'0"; 6245-4'6"; 6247-7'6"; 6249-10'6"; 6251-16'0"; 6252-17'0"; 6253-18'6"-19'3"; 6254-19'9"; 6256-25'0"; 6258-water;

Core Samples : 6246-5'0"-6'6"; 6255-21'0"-22'6"; 6257-28'6"-30'0";

Large Samples : 6248-8'0"-9'6"; 6250-11'6"-13'0";

DESCRIPTION OF STRATA	Thickness Feet	Thickness Inches	Depth Below Surface Feet	Depth Below Surface Inches
The descriptions are given in accordance with the Civil Engineering Code of Practice No. 1 "Site Investigations." No responsibility is accepted for these descriptions and clients should examine the samples submitted.				
No. 1 Boring				
Made Ground (Topsoil and Brick Rubble)	1	6	1	6
Sandy Mottled Clay and Stones	3	6	5	0
Sand and Gravel with Clay content	2	0	7	0
Gravel and Sand	8	6	15	6
Sandy Brown Clay and Stones	1	0	16	6
Gravel	2	0	18	6
Brown Clay and Stones	0	9	19	3
Firm Blue Clay	10	9	30	0
TOTAL FROM SURFACE ...	30	0	30	0

This form is to be returned to Head Office immediately the borehole is finished.

Foreman's Signature .... *Date* ....

P. & R. Ltd.—4223

2

TQ08 SE/1.B
0683 8186

GROUND EXPLORATIONS LIMITED

BOREHOLE SECTION SHEET

Date June, 19 54.

CONTRACT NAME Hillingdon Hospital. ORDER NO.

Bored for : Messrs. Andrews, Kent & Stones.

Address : 60-64, Harlour Street, London, W.1.

Address of Site : Hospital Grounds.

District or Town : Hillingdon. County :

Standing Water Level : 4'8" Below Surface : Dia. of Borehole : 6 Inches.

Water Struck (1) 7'6" (2) (3)

Boring Commenced : 4.6.54. Boring Completed : 8.6.54.

Special Remarks :

Jar Samples : 6259-1'0"; 6260-3'6"; 6262-8'6"; 6263-10'6"; 6265-12'6"; 6266-13'6"; 6268-17'0"; 6271-21'0"; 6273-27'6"; 6275-number;

Core Samples : 6261-5'0"-5'5"; 6264-11'0"-12'6"; 6267-15'0"-16'6"; 6272-21'0"-22'6"; 6274-28'6"-30'0";

Large Samples: 6270-18'0"-19'6"; 6269-11'6"-13'0";

DESCRIPTION OF STRATA	Thickness Feet	Thickness Inches	Depth Below Surface Feet	Depth Below Surface Inches
The descriptions are given in accordance with the Civil Engineering Code of Practice No. 1 "Site Investigations." No responsibility is accepted for these descriptions and clients should examine the samples submitted.				
No. 2 Boring				
Topsoil	3	0	3	0
Brown Mottled Clay	5	0	8	0
Gravel and Sand, with Clay content	2	0	10	0
Sandy Brown Clay	1	0	11	0
Gravel and Sand, with Clay content	2	0	13	0
Sandy Brown Clay	3	6	16	6
Gravel and Sand	3	6	20	0
Brown Clay	0	6	20	6
Firm Blue Clay	9	6	30	0
TOTAL FROM SURFACE ...	30	0	30	0

This form is to be returned to Head Office immediately the borehole is finished.

Foreman's Signature..... *Date*.....

P. & R. Ltd.—(111)

3

TQ 08 SE/1.C
0683 8186

GROUND EXPLORATIONS LIMITED

BOREHOLE SECTION SHEET

Date June, 19 54.

CONTRACT NAME Hillingdon Hospital. ORDER NO.

Bored for : Andrews, Kent and Stone.

Address : 60-66, Wardour Street, London, W.1.

Address of Site : Hospital Grounds.

District or Town : Hillingdon. County : Middx.

Standing Water Level : 2'9" Below Surface : Dia. of Borehole : 6 Inches.

Water Struck (1) 2'9" (2) (3)

Boring Commenced : 14.6.54. Boring Completed : 19.6.54.

Special Remarks :

Jar Samples : 6292-1'0"; 6293-3'6"; 6295-7'6"; 6296-12'0"; 6297-13'0"; 6298-15'0"; 6300-18'6"; 1902-25'0"; 1904-30'0"; 1905-water;

Core Samples : 6294-5'0"-6'6"; 6299-15'6"-17'0"; 1901-21'6"-23'0"; 1903-28'6"-30'0";

Large Sample : 1906-7'0"-12'6";

DESCRIPTION OF STRATA	Thickness Feet	Thickness Inches	Depth Below Surface Feet	Depth Below Surface Inches
The descriptions are given in accordance with the Civil Engineering Code of Practice No. 1 "Site Investigations." No responsibility is accepted for these descriptions and clients should examine the samples submitted. No. 3 Boring				
Topsoil	0	6	0	6
Clayey Sand and Gravel	2	6	3	0
Mottled Clay	4	0	7	0
Gravel and Sand	5	6	12	6
Brown Clay	2	0	14	6
Firm Blue Clay	15	6	30	0
TOTAL FROM SURFACE ...	30	0	30	0

This form is to be returned to Head Office immediately the borehole is finished.

Foreman's Signature..... *Date*.....

P. & B. Ltd.—4213

4

TQ 08SE/1.D.
0683 8186

GROUND EXPLORATIONS LIMITED

BOREHOLE SECTION SHEET

Date June 19 54

CONTRACT NAME Hillingdon Hospital. ORDER NO.

Bored for : Messrs. Andrews, Kent and Stone.

Address : 60-66, Wardour Street, London, W.1.

Address of Site : Hospital Grounds.

District or Town : Hillingdon. County : Middx.

Standing Water Level : 2'6" Below Surface : Dia. of Borehole : 6 Inches.

Water Struck (1) 2'7" (2) (3)

Boring Commenced : 9.6.54. Boring Completed : 11.6.54.

Special Remarks :

Jar Samples : 6276-1'0"; 6277-3'0"; 6278-6'0"; 6279-11'0"; 6281-13'6"; 6283-14'9"; 6285-17'6"; 6288-21'9"-22'6"; 6289-23'0"; 6290-27'6"; 6287-water;

Core Samples : 6282-13'6"-14'6"; 6284-15'0"-16'6"; 6286-20'0"-21'6"; 6291-28'6"-30'0";

Large Sample: 5'6"-13'0"-6280;

DESCRIPTION OF STRATA	Thickness Feet	Thickness Inches	Depth Below Surface Feet	Depth Below Surface Inches
The descriptions are given in accordance with the Civil Engineering Code of Practice No. 1 "Site Investigations." No responsibility is accepted for these descriptions and clients should examine the samples submitted. No. 4 Boring				
Topsoil	0	6	0	6
Clayey Sand and Gravel	2	0	2	6
Brown Mottled Clay	3	0	5	6
Gravel and Sand	7	6	13	0
Brown Clay	1	6	14	6
Firm Blue Clay	7	3	21	9
Claystone	0	9	22	6
Firm Blue Clay	7	6	30	0
TOTAL FROM SURFACE ...	30	0	30	0

This form is to be returned to Head Office immediately the borehole is finished.

Foreman's Signature..... *Date*.....

P. & R. Ltd.—4113

5

TQ 08 SE/1.E
0683 8186

GROUND EXPLORATIONS LIMITED

BOREHOLE SECTION SHEET

Date June, 19 54

CONTRACT NAME Hillingdon Hospital. ORDER NO.

Bored for : Messrs. Andrews, Kent and Stone.

Address : 60-62, Harbour Street, London, W.1.

Address of Site : Hospital Grounds.

District or Town : Hillingdon. County : Middx.

Standing Water Level : 3'8" Below Surface : Dia. of Borehole : 6 Inches.

Water Struck (1) 5'6" (2) (3)

Boring Commenced : 16.6.54. Boring Completed : 17.6.54.

Special Remarks :

Jar Samples : 1907-1'0"; 1922-3'6"; 1909-7'6"; 1911-11'0"; 1918-12'6"; 1914-15'0"; 1916-20'0"; 1918-25'0"; 1920-30'0"; 1921-water;

Core Samples : 1908-5'0"-6'6"; 1913-12'6"-13'6"; 1915-17'6"-19'0"; 1917-22'6"-24'0"; 1919-28'6"-30'0";

Large Sample; 1910-7'0"-10'6";

DESCRIPTION OF STRATA	Thickness Feet	Thickness Inches	Depth Below Surface Feet	Depth Below Surface Inches
The descriptions are given in accordance with the Civil Engineering Code of Practice No. 1 "Site Investigations." No responsibility is accepted for these descriptions and clients should examine the samples submitted.				
No. 5 Boring				
Topsoil	0	6	0	6
Topsoil and Stones	2	6	3	0
Mottled Clay and Stones	4	0	7	0
Gravel and Sand with Clay content	3	6	10	6
Brown Clay	1	6	12	0
Firm Blue Clay	18	0	30	0
TOTAL FROM SURFACE ...	30	0	30	0

This form is to be returned to Head Office immediately the borehole is finished.

Foreman's Signature..... *Date*.....

P. & R. Ltd.—4113

6

1" : 25'

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Mx & Adm. 1H NE

GROUND EXPLORATIONS LIMITED

BOREHOLE SECTION SHEET

Date Dec. 1956 19

CONTRACT NAME Hillingdon Hospital ORDER NO.

Bored for : Messrs. Andrews Kent & Stone

Address : 60-66, Wardour Street, W.1

Address of Site : Hillingdon Hospital

District or Town : Hillingdon County : Middx.

Standing Water Level : 3'0" below surface Dia. of Borehole : 6 Inches.

Water Struck (1) 3'0" (2) (3)

Boring Commenced : 17 Dec. 56 Boring Completed : 18 Dec. 56

Special Remarks :

Jar Samples : 9214 - 3'0"; 9215 - 5'0"; 9217 - 10'0"; 9218 - 12'0"; 9219 - 15'0"; 9220 - Water

Core Samples :

Sand/Gravel Samples : 9216 - 8'0"

DESCRIPTION OF STRATA	Thickness Feet	Thickness Inches	Depth Below Surface Feet	Depth Below Surface Inches
The descriptions are given in accordance with the Civil Engineering Code of Practice No. 1 "Site Investigations." No responsibility is accepted for these descriptions and clients should examine the samples submitted.				
No. 6 Boring				
Topsoil & stoney clay	3	0	3	0
Angular flint gravel with some sand	6	0	9	0
Claybound gravel and sand	2	0	11	0
Stiff blue clay	4	0	15	0
TOTAL FROM SURFACE ...	15	0	15	0

This form is to be returned to Head Office immediately the borehole is finished.

Foreman's Signature..... *Date*.....

P.&R.Ltd.—1502

TQ 085E/1. CT
0683 8186

GROUND EXPLORATIONS LIMITED

BOREHOLE SECTION SHEET

Dec. 1956

Date ..... 19....

CONTRACT NAME: Hillingdon Hospital

ORDER NO.

Bored for : Messrs. Andrews Kent & Stone

Address : 60-66, Wardour Street, W.1

Address of Site : Hillingdon Hospital

District or Town : Hillingdon

County : Middx.

Standing Water Level : 6'0" below surface

Dia. of Borehole : 5 Inches.

Water Struck (1) 6'0" (2) (3)

Boring Commenced : 17 Dec. 1956

Boring Completed : 18 Dec. 1956

Special Remarks :

Jar Samples : 9108 - 1'0"; 9109 - 3'0"; 9110 - 6'0"; 9111 - 11'0"; 9113 - 14'0"; 9112 - Water

Core Samples :

Sand/Gravel Samples : 9112 - 12'0"

DESCRIPTION OF STRATA	Thickness Feet	Thickness Inches	Depth Below Surface Feet	Depth Below Surface Inches
The descriptions are given in accordance with the Civil Engineering Code of Practice No. 1 "Site Investigations." No responsibility is accepted for these descriptions and clients should examine the samples submitted.				
No. Boring				
Topsoil & stoney clay	1	6	1	6
Brown mottled clay	3	6	5	0
Angular gravel with some sand	8	0	13	0
Stiff blue clay	2	0	15	0
TOTAL FROM SURFACE ...	15	0	13	0

This form is to be returned to Head Office immediately the borehole is finished.

Foreman's Signature ..... *Date* .....

P.G.E. Ltd.—1302

TQ 08 SE/1. H
0683 8186

GROUND EXPLORATIONS LIMITED

BOREHOLE SECTION SHEET

Date December 1956 19

CONTRACT NAME Hillingdon Hospital — ORDER No.

Bored for : Messrs. Andrews Kent & Stone

Address : 60-66, Wardour Street, W.1

Address of Site : Hillingdon Hospital

District or Town : Hillingdon — County : Middx.

Standing Water Level : None below surface — Dia. of Borehole : 6 Inches.

Water Struck (1) " (2) (3)

Boring Commenced : 17 Dec. 56 — Boring Completed : 18 Dec. 56

Special Remarks :

Jar Samples :

9514 - 2'0"; 9515 - 6'6"; 9516 - 12'0"; 9517 - 16'0"; 9518 - 20'0"

Core Samples :

Sand/Gravel Samples :

DESCRIPTION OF STRATA	Thickness Feet	Thickness Inches	Depth Below Surface Feet	Depth Below Surface Inches
The descriptions are given in accordance with the Civil Engineering Code of Practice No. 1 "Site Investigations." No responsibility is accepted for these descriptions and clients should examine the samples submitted.				
No. Boring 8				
Topsoil	1	0	1	0
Clay & flints	5	0	6	0
Firm brown mottled clay	9	0	15	0
Stiff blue clay	5	0	20	0
TOTAL FROM SURFACE ...	20	0	20	0

This form is to be returned to Head Office immediately the borehole is finished.

Foreman's Signature..... *Date*.....

P.&B.Ltd.—2502

9

TQ 08 SE/1. I
0683 8186.

GROUND EXPLORATIONS LIMITED

BOREHOLE SECTION SHEET

Date December 1956 19

Contract Name: Hillingdon Hospital
Bored for: Messrs. Anfrews Kent & Stone
Address: 60-66, Wardour Street, W.1
Address of Site: Hillingdon Hospital
District or Town: Hillingdon
County: Middx.
Standing Water Level: 6'0" below surface
Water Struck (1): 6'0" (2) (3)
Dia. of Borehole: 6 Inches.
Boring Commenced: 19 Dec. 1956
Boring Completed: 20 Dec. 1956
Special Remarks:
Order No.

Jar Samples: 9115 - 2'0"; 9116 - 5'6"; 9117 - 7'0"; 9118 11'0"; 9120 - Water

Core Samples:

Sand/Gravel Samples:

DESCRIPTION OF STRATA	Thickness Feet	Thickness Inches	Depth Below Surface Feet	Depth Below Surface Inches
The descriptions are given in accordance with the Civil Engineering Code of Practice No. 1 "Site Investigations." No responsibility is accepted for these descriptions and clients should examine the samples submitted.				
14 No. 10 Boring				
Topsoil	1	0	1	0
Brown clay	5	0	6	0
Angular flint gravel	5	0	11	0
Firm brown clay	1	0	12	0
Stiff blue clay	2	0	14	0
TOTAL FROM SURFACE ...	14	0	14	0

This form is to be returned to Head Office immediately the borehole is finished.

Foreman's Signature..... *Date*.....

P.NR.L&S.—1502

TQ/09 SE/13
0698 8202

Middx 14 NE-E 255/115

I.

Middlesex County Council Hospital
Hillingdon.

Visited, and the following facts ascertained:—

(1) There is only one source of supply at the moment and this is the 190ft well and boring (255/115c). The pump was lowered an additional 20 ft. in this in 1936 and on a 1 hr. test the yield was 2,300 gallons. This is situated beneath the water-tower and is sited on 6" Middx. 14 NE/E.

(2) There was no knowledge, on the spot, of the two older wells and bores which were at the Union (now part of the Hospital). Extensive enquiries were made by myself and Mr. Daglish the Engineer among the older members of the staff and search was made among old documents, but no definite information was obtained. It was discovered that there was an old well in the yard (at a spot shown on 6" Middx 14 NE/E) but this did not seem to be more than 15-16 ft. deep with 10 ft. of water and this may be the "well" referred to on attached sheet with extract from M.O.H. papers of 1935. In the opinion of the Engineer, however, the bottom of the well when sounded appeared hollow, which may mean that an old deeper well has been plugged and used as a drain.

There was also some indication that a well had been situated just E. of the Union in a spot now in the Colham Road (approx sited on above map)

(3) A new bore is now in process of construction by Le Grands and had reached the Chalk from the site shown (255/115 d) on above map*. O.D. of this site is 160 ft. Details of this should be obtained from Middx. Co. Council, and as there is such confusion re. thicknesses of Reading Beds in this area, this new work should be considered very important.

L.S. Morris.

19.vi.41

* See record attached
L.S.M.
Sept. 1941

2

TQ 08/71A TQ 08/71A
TQ 08SE/13
0694 8202
255
115
a

TQ 0694 8202

UXBRIDGE

255
115

Uxbridge Union (Cowley Green)

Sunk and communicated by Mr. C. Page.

Mem. G.S. vol. IV. 1872 p. 530
W.M. vol. II. 1889 p.174
M.G.S., Geol. of Mdx etc, 1864, p.105
Lucas, 1877, T. Inst. Surveyors, p.316 (Table)

Dug 51 feet, the rest bored.

Water rose to within 29 feet from the ground.

				Thickness	Depth	OD + c.45m
DRIFT	Gravel	...		12	12	33 +33.3
LONDON CLAY	[London Clay, 94 ft.]	Blue clay ...		39	51	
		Blue clay, with small stones		51	102	
		[Basement-bed]	Black sand and pebbles	3	105	
			Stone ...	1	106	
READING BEDS	[Reading Beds, ~~34½~~ ft.?] 69ft	Blue veiny clay ...		4	110	
		Red veiny clay ...		4	114	
		White marl ...		1	115	
		Yellow clay ...		21	136	
		Sand ...		½	136½	
		Brown clay ...		6½	143	
		Sand ...		25	168	
		Blue clay ...		3	171	
		Black clay ...		2	173	
		Black rock [? flints] ...		2	175	
UPPER CHALK	[Chalk, 38 ft.]	Grey chalk ...		23	198	
		Chalk, with a few small flints		3	201	
		Grey chalk ...		12	213	

According to Mr. B. Latham (Trans. Soc. Engineers for 1864, p. 245)
2 wells at Uxbridge each yielded 100,000 gallons a day.

Dble Bank

TQ 08/71 A

255/115 a

TQ 0694 8203

UXBRIDGE

255/115

Uxbridge Union. (Colham Green)

Sunk and communicated by Mr. C. Page.

Mem. G.S. vol. IV. 1862. p. 530
H.M. vol. II. 1864 p. 174
M.G.S., Geol. of Mdx. etc., 1864, p. 105
Lucas, 1877, T. Inst. Surveyors, p. 316 (Table)

Dug 51 feet, the rest bored.

Water rose to within 29 feet from the ground.

			Thickness	Depth
DRIFT	Gravel ...	...	12	12
LONDON CLAY	[London Clay, 94 ft.]	Blue clay ...	39	51
		Blue clay, with small stones	51	102
		[Basement-bed] Black sand and pebbles	3	105
		[Basement-bed] Stone ...	1	106
READING BEDS	[Reading Beds, ~~71~~ 69 ft.?]	Blue veiny clay ...	4	110
		Red veiny clay ...	4	114
		White marl ...	1	115
		Yellow clay ...	21	136
		Sand ...	½	136½
		Brown clay ...	6½	143
		Sand ...	25	168
		Blue clay ...	3	171
		Black clay ...	2	173
		Black rock [? flints] ...	2	175
UPPER CHALK	[Chalk, 38 ft.]	Grey chalk ...	23	198
		Chalk, with a few small flints	3	201
		Grey chalk ...	12	213

According to Mr. B. Latham (Trans. Soc. Engineers for 1864, p. 245) 2 wells at Uxbridge each yielded 100,000 gallons a day.

Dale Buck

Middx 14 NE-E 255/115 TQ08/71 255 115

Middlesex County Council Hospital.
Hillingdon.

Visited, and the following facts ascertained:—

(1) There is only one source of supply at the moment and this is the 1904 well and boring (255/115c). The pump was lowered an additional 20 ft. in two in 1936 and on a 1 hr. test the yield was 2,300 gallons. This is situated beneath the water-tower and is sited on 6" Middx. 14 NE/E.

(2) There was no knowledge, on the spot, of the two older wells and bores which were at the Union (now part of the Hospital). Extensive enquiries were made by myself and Mr. Dagleish the Engineer among the older members of the staff and search was made among old documents, but no definite information was obtained. It was discovered that there was an old well in the yard (at a spot shown on 6" Middx 14 NE/E) but this did not seem to be more than 15-16 ft. deep with 10 ft. of water and this may be the "well" referred to on attached sheet with extract from M.O.H. forms of 1935. In the opinion of the Engineer, however, the bottom of the well when sounded appeared hollow, which may mean that an old deeper well has been plugged and used as a drain.

There was also some indication that a well had been situated just E. of the Union in a spot now in the Colham Road (approx. sited on above map)

(3) A new bore is now in process of construction by Le Grands and had reached the Chalk from the site shown (255/115 d) on above map.* O.D. of this site is 160 ft. Details of this should be obtained from Middx. Co. Council, and as there is much confusion re. thickness of Reading Beds in this area, this new work should be considered very important.

L.S. Morris.

19.vi.41

* See record attached
L.S.M.
Sept. 1941

Date Blank

3

RECORD of WELL or BORING

Survey No. 1" N.S. 255 TQ08/71B
1" O.S. TQ08SE/14
Six-inch map 14 NE /E 0698 8207

at (house or farm) Union Poor House Middx.
Town, Village, &c. Hillingdon County Bucks

Exact site (unless a tracing from a map is supplied, give distance and direction from parish church, cross-roads, or other object shown on maps). TQ 0698 8207

Popular Edition of one-inch map. Sheet ... Square ...

Surface level of ground ... ft. above Ordnance Datum. Well or Bore commenced at ... ft. below surface level of ground.

Sunk ... ft., diameter ... ft. Bored ... ft.; diameter of boring: at top ... in., at bottom ... in.

Details of lining tubes (internal diameters preferred) Water rises to 39' below surface

115

TQ08/71B

Water struck at depths of (feet) ...

Rest-level of water below/above top of well or bore ... ft. Pumping level ... ft. Rate of recovery ... hours.

Suction at ... ft. depth. Yield: (i) on test ... galls. per ..., (ii) normal ... galls. per ...

Quality (attach copy of analysis if available) ...

Made by C. Isler & Co. Ltd.. for Mr. ... Date of boring Prior to 1889

Information from ...

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA. (and any additional remarks)	THICKNESS. Feet.	THICKNESS. Inches.	DEPTH. Feet.	DEPTH. Inches.
River Drift 16'6"	Loam	1	6		
	Gravel	15		16	6
London clay 92'6"	Yellow clay	2		18	6
	Blue clay	22		40	6
	Claystone	1		41	6
	Blue clay	66	6	108	
	Black (flint) pebbles (basement bed)	1		109	
Reading Beds 96'6"	Coloured (mottled) clay	35		144	
	Brown clay	25		169	
	Brown sand	30		199	
	Blue clay	3	6	202	6
	Black peat (clay?) and black pebbles	3		205	6
✓ Chalk	Chalk	45	6	251	

UCK 776 4/7/7

There is a question about the thickness of 10ft Reading Beds in this well. Normal thickness for district is about 60ft as this is shown (66ft) to take some at the site, (L' Evans. 1904)

Published in "London Memoir" II p. 115.

Date Bank

Geological Survey and Museum, South Kensington, London, S.W.7.

For Survey use only.

Date received.	G.S.M.	M. of H. notified.	Site marked on 1" map.

(968575) Wt 28570/99 2,500 3/36 H.J.R.&L.Ld Gp 414

3

RECORD of WELL or BORING

Survey No.
1" N.S. 255
1" O.S.

255

at (country farm) Union Poor House Midx.
Town, Village, &c. Hillingdon County Bucks
Six-inch map 14 NE /E
Exact site (unless a tracing from a map is supplied, give distance and direction from parish church, cross-roads, or other object shown on maps). TQ 0698 8208
Popular Edition of one-inch map. Sheet .... Square ....

Surface level of ground 145 ft. above Ordnance Datum. Well or Bore commenced at .... ft. below surface level of ground.
Sunk .... ft., diameter .... ft. Bored .... ft.; diameter of boring: at top .... in., at bottom .... in.
Details of lining tubes (internal diameters preferred) Water rises to 39' below surface

115b

TQ08/718

Water struck at depths of (feet) ....
Rest-level of water below ~~above~~ top of well or bore .... ft. Pumping level .... ft. Time of recovery .... hours.
Suction at .... ft. depth. Yield: (i) on test .... galls. per ...., (ii) normal .... galls. per ....
Quality (attach copy of analysis if available) ....
Made by C. Isler & Co. Ltd. .... for Mr. .... Date of boring Prior to 1889.
Information from ....

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA. (and any additional remarks)	THICKNESS. Feet.	THICKNESS. Inches.	DEPTH. Feet.	DEPTH. Inches.
(River Drift) 16'6"	Loam	1	6		
	Gravel	15		16	6
London clay ~~99' 6"~~	Yellow clay	2		18	6
	Blue clay	22		40	6
	Claystone	1		41	6
	Blue clay	66	6	108	
	Black (flint) pebbles (basement bed)	1		109	
Reading Beds 96'6"	Coloured (mottled) clay	35		144	
	Brown clay	25		169	
	Brown sand	30		199	
	Blue clay	3	6	202	6
	Black peat (clay?) and black pebbles	3		205	6
✓ Chalk UCK	Chalk	45	6	251	

JH 6 1/7/67

There is a question about the thickness of the Reading Beds in this well. Normal thickness for district is about 60 ft - as this is shown (66 ft) to take account at the site, (L'Brand. 1904)

Published in "London Memoir" II p. 115.

Data Bank

Geological Survey and Museum, South Kensington, London, S.W. 7.

For Survey use only.

Date received.	G.S.M.	M. of H. notified.	Site marked on 1" map.

(66237B) Wt 28270/38 2,500 2/38 H, J, R & L, Ld Gp 616

Middx 14 NE-E 255 / 115 TQ08/71
255
115

Middlesex County Council Hospital. Hillingdon.

Visited, and the following facts ascertained:—

① There is only one source of supply at the moment and this is the 1904 well and boring (256/115c). The pump was lowered an additional 20 ft. in two in 1936 and on a 7 hr. test the yield was 2,300 gallons. This is situated beneath the water-tower and is sited on 6" Middx. 14 NE/E.

② There was no knowledge, on the spot, of the two older wells and bores which were at the Union (now part of the Hospital). Extensive enquiries were made by myself and Mr. Daglish the Engineer among the older members of the staff and search was made among old documents, but no definite information was obtained. It was discovered that there was an old well in the yard (at a spot shown on 6" Middx 14 NE/E) but this did not seem to be more than 15-16 ft. deep with 10 ft. of water and this may be the "well" referred to on attached sheet with extract from M.O.H. forms of 1935. In the opinion of the Engineer, however, the bottom of the well when sounded appeared hollow, which may mean that an old deeper well has been plugged and used as a drain.

There was also some indication that a well had been situated just E. of the Union in a spot now in the Colham Road (approx. sited on above map)

③ A new bore is now in process of construction by Le Grands and had reached the Chalk from the site shown (255/115 d) on above map.* O.D. of this site is 160 ft. Details of this should be obtained from Middx. Co. Council, and as there is much confusion re. thickness of Reading Beds in this area, this new work should be considered very important.

L.S. Morris.

19.vi.41

* See record attached L.S.M. Sept. 1941

Date Blank

4

RECORD of WELL or BORING

Survey No. TQ08/71C
1" No. 255 TQ08SE/15
0695 8216

at (house or farm) [illegible]

Town, Village, &c. [illegible] County Middlesex Six-inch map Middlesex 14 NE

Exact site (unless a tracing from a map is supplied, give distance and direction from parish church, cross-roads, or other object shown on maps). ½ mile south of the village
TQ 0695 8216
Popular Edition of one-inch map (Sheet / Square) 15 :C

Surface level of ground 147½ ft. above Ordnance Datum. Well or Bore commenced at 0 ft. below surface level of ground.

Sunk 62 ft., diameter 4½ ft. Bored 387 ft.; diameter of boring: at top 6" in., at bottom 6" in.

Details of lining tubes (internal diameters preferred) Well lined with cast iron cylinders 4'3" internal diameter [illegible] bore lined from 61½ ft down to 201½ ft. down with 6" tube.

TQ08/71C

Water struck at depths of (feet) 361, 374, 395

Rest-level of water below top of well 44½ ft. Pumping level 59½ ft. Time of recovery ______ hours.

Suction at ______ ft. depth. Yield: (i) on test 1800 galls. per hour, (ii) normal ______ galls. per ______

Quality (attach copy of analysis if available)

Made by Legrand & Sutcliff, [illegible] for Mr. the Uxbridge Union Date of boring 1904

Information from Middlesex County Council Architects Department.

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA. (and any additional remarks)	THICKNESS. Feet.	THICKNESS. Inches.	DEPTH. Feet.	DEPTH. Inches.
DUG WELL IN DRIFT & LONDON CLAY	Dug Well	63	0	63	0
	Concrete	2	0	65	0
	Blue Clay and Septaria	45	0	110	0
4.23.66 RB	Mottled clay	30	0	140	0
	Brown Clay	4	0	144	0
	Live Brown Sand	26	0	170	0
	Blue Clay	3	6	173	6
	[illegible] clay and pebbles	2	6	176	0
UCK Upper Ck. 274	Chalk and flints with [illegible] from old borehole	19	0	195	0
	Chalk and Flints	130	0	325	0
	Chalk full of flints	23	6	348	6
	Block Chalk and Flints very hard.	20	0	368	6
	Chalk and Flints	40	0	408	6
	Block Chalk and Flints	5	0	413	6
	Grey Chalk	5	0	418	6
	White Chalk with few Flints	21	6	440	0
	Hard Chalk with grey bands & few Flints	10	0	450	0

OD m +45 m; 325 +4.5; 33.6 −8.6; −137 −42 m

JP. 19:11:35.

TEC 12/75

Originally bored to 325' in 1904.
deepened to 450' in 1919.

Water level 59'0" in 1919
Water level 75'5" in 1927.
" " 84'2" in 1931
Yield 2100 gph. in Jan 1935.

In use. Pump lowered in May 1936 & then gave yield of 2300 g. on 1 hr. test

Date Bank

GEOLOGICAL SURVEY AND MUSEUM,
SOUTH KENSINGTON,
LONDON, S.W.7.

For Survey use only.

Date received.	G.S.M.	M. of H. notified.	Site marked on 1" map.
18/12/35	6328		✓

(8937/D) Wt 38070/98 3,000 7/36 H. J. R. & L. Ltd. Gp 616

TQ08/71C
TQ0855/15
0695 8216

HILLINGDON COUNTY HOSPITAL.

Levels			Thickness	Remarks.
EXISTING WELL		Top of C.I. lining to well		Well 63ft.x 4'6" interior.
INDRIFT & LONDON CLAY	63'	Bottom of well		Top of 6" pipe new 1919 water level 1919 - 59 ft.
63'	65'	Concrete base to well	2'	
65'	110'	Blue Clay to Septaria.	45'	
110'	140'	Mottled clay	30'	Water level 75ft. 5" 1927. 1927 pump fixed at 115'6"
READING BEDS				
140'	144'	Brown Clay.	4'	
144'	170'	Live brown sand	26'	
170'	173'6"	Blue Clay	3'6"	
173'6"	176'	Dark Clay and pebbles	2'6"	
176'	195'	Chalk & Flints (with sand from old Bore)	19'	
195'	325'	Chalk & Flints.	130'	Bored to 325' in 1904. Bottom of 6" pipe 201'6" Deepened to 450 in 1919.
UCK & MCK?				
325'	348'6"	Chalk full of flints	23'6"	
348'6"	368'6"	Block chalk & flints (very hard)	20'	Water pressure 361'
368'6"	408'6"	Chalk & flints	40'	Water pressure 374' Water pressure 395'
408'6"	413'6"	Block chalk & flints	5'	
413'6"	418'6"	Grey Chalk	5'	
418'6"	440'	White chalk & few flints	21'6"	
440'	450'	Hard chalk with grey bands and few flints	10'	1927 depth

THIS LOG IS 115 C & 15 Duplicate OUT OF PLACE!!

—SEE PREVIOUS PAGES

4

RECORD of WELL or BORING

255

Survey No. 255

115 C

at (house or farm) The Workhouse

Town, Village, &c. Hillingdon County Middlesex Six-inch map Middlesex 14 NE

Exact site (unless a tracing from a map is supplied, give distance and direction from parish church, cross-roads, or other object shown on maps). ½ mile south of the Village TQ 0695 8216 Popular Edition of one-inch map (Sheet / Square)

Surface level of ground 147.5 ft. above Ordnance Datum. Well or Bore commenced at 0 ft. below surface level of ground.

Sunk 63 ft., diameter 4½ ft. Bored 387 ft.; diameter of boring: at top 6" in., at bottom 6" in.

Details of lining tubes (internal diameters preferred) Well lined with Cast Iron Cylinders 4'6" internal diameter for 63 ft. Bore lined from 61½ ft down to 201.5 ft. down with 6" tube.

TQ08/71C

Water struck at depths of (feet) 361, 374, 395

Rest-level of water below top of well ~~on bore~~ 44½ ft. Pumping level 59½ ft. Time of recovery .... hours.

Suction at .... ft. depth. Yield: (i) on test 1800 galls. per hour, (ii) normal .... galls. per ....

Quality (attach copy of analysis if available)

Made by Legrand & Sutcliff, 138 Bunhill Row for Mr. The Uxbridge Union Date of boring 1904

Information from Middlesex County Council Architects Department.

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA. (and any additional remarks)	THICKNESS. Feet.	THICKNESS. Inches.	DEPTH. Feet.	DEPTH. Inches.
DUG WELL IN DRIFT &	Dug Well	63	0	63	0
LONDON CLAY	Concrete	2	0	65	0
	Blue Clay and Septaria	45	0	110	0
	Mottled Clay	30	0	140	0
W.R.B. 66	Brown Clay	4	0	144	0
	Live Brown Sand	26	0	170	0
RB	Blue Clay	3	6	173	6
	Dark Clay and Pebbles	2	6	176	0
	Chalk and Flints (with sand from old borehole)	19	0	195	0
	Chalk and Flints	130	0	325	0
UCK	Chalk full of Flints	23	6	348	6
Upper Ck. 274.	Block Chalk and Flints very hard.	20	0	368	6
	Chalk and Flints	40	0	408	6
	Block Chalk and Flints	5	0	413	6
	Grey Chalk	5	0	418	6
	White Chalk with few Flints	21	6	440	0
	Hard Chalk with grey bands & few Flints	10	0	450	0
S.P. 19:12:35.					
TEC 12/75	Originally bored to 325 in 1904 deepened to 450 in 1919.				
	Water level 59'0" in 1919				
	Water level 75'5" in 1927.				
	" " 84'2" in 1931				
	Yield 2100 gph. in Jan 1935.				
	In use. Pump deepened in May 1936 & then gave yield of 2,300 g. on 1 hr. test				

Data Bank

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

For Survey use only.

Date received.	G.S.M.	M. of H. notified.	Site marked on 1" map.
18/12/35	6328		✓

(86237B) Wt 28270/38 2,500 2/35 H, J, R & L, Ld Gp 686

5

RECORD OF WELL (SHAFT OR BORE) 255

1" N.S. 255
1" O.S.
Grid Ref.

At Hillingdon Workhouse

Town or Village ______ County Midd'x 14 NE-E Six-inch quarter sheet 175 C

Exact site ______ (A rough sketch-map or a tracing from a map is very desirable)

TQ 0695 8216 in parish of ______

Level of ground surface above sea-level (O.D.) +148 ft. If well starts below ground surface, state how far ______ ft.

Shaft ______ ft., diameter ______ ft. Bore ______ ft. Diameter of bore: at top ______ ins.; at bottom ______ ins.

TQ 08/71C

Details of permanent lining tubes (internal diameters preferred) ______

Water struck at depths of (feet) ______

Rest-level of water below ~~above~~ top of well 59 feet. Suction at ______ feet. Yield on ______ hours'/days' test ______ gallons per ______ (with pump of capacity ______ g.p.h.); depressing water level to ______ feet below top. Time of recovery ______ hrs. Amount normally pumped daily ______ g.p.h. for ______ hours.

Quality (attach copy of analysis if available) Le Grand C. & G.

Sunk by ______ for Mr. ______ Date of well 1919

Information from Le Grand S.B. 2/147.

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA (and any additional remarks).	THICKNESS Feet.	THICKNESS Inches.	DEPTH Feet.	DEPTH Inches.
DUG WELL	Dug well	63		63	
SEE PREVIOUS PAGE	~~Boring~~ Boring.	262		325	
	Chalk & flints (flints numerous)	23	6	348	6
UPPER &	" " " , very hard	20		368	6
MIDDLE	" " " , hard in places.	45		413	6
CHALK	(water 268-345				
	and 390 to 395)				
	Grey chalk & little flints.	5		418	6
	Hard " flints with few grey veins.	18		436	6
	Hard chalk.	7		443	6
	Blue "Gault"?		6	444	6

Originally bored (1904) to 325 ft, — deepened to 450 in 1919 (see notes attached)

Data Bank

GEOLOGICAL SURVEY AND MUSEUM.
SOUTH KENSINGTON.
LONDON. S.W.7.

For Survey use only

Date received	G.S.M. Office File No.	Site marked on 1" map (use symbol)
4 DEC 1939		⊙

(*11835) Wt.29051/O.389 10,000 9/89 A.& E.W.Ltd. Gp.486

MDDX 14 NE-E

TQ 08/71C

2 255/115 D

115D

HILLINGDON COUNTY HOSPITAL.

Levels	Surface		Thickness	Remarks.
EXISTING WELL		Top of C.I. lining to well		Well 63ft.x 4'6" interior.
IN DRIFT & LONDON CLAY	63'	Bottom of well		Top of 6" pipe new 1919 water level 1919 - 59 ft.
63'	65'	Concrete base to well	2'	
65'	110'	Blue Clay to Septaria.	45'	
110'	140'	Mottled clay	30'	Water level 75ft. 5" 1927. 1927 pump fixed at 115'6"
READING BEDS				
140'	144'	Brown Clay.	4'	
144'	170'	Live brown sand	26'	
170'	173'6"	Blue Clay	3'6"	
173'6"	176'	Dark Clay and pebbles	2'6"	
176'	195'	Chalk & Flints (with sand from old Bore)	19'	
195'	325'	Chalk & Flints.	130'	Bored to 325' in 1904. Bottom of 6" pipe 201'6" Deepened to 450 in 1919.
UCK & MCK ?				
325'	348'6"	Chalk full of flints	23'6"	
348'6"	368'6"	Block chalk & flints (very hard)	20'	Water pressure 361'
368'6"	408'6"	Chalk & flints	40'	Water pressure 374' Water pressure 395'
408'6"	413'6"	Block chalk & flints	5'	
413'6"	418'6"	Grey Chalk	5'	
418'6"	440'	White chalk & few flints	21'6"	
440'	450'	Hard chalk with grey bands and few flints	10'	1927 depth

THIS LOG IS 115 C & IS OUT OF PLACE !! Date Bank

—SEE PREVIOUS PAGES

M.93x 14 NE-E

255/115 C.

TQ08/71C

HILLINGDON COUNTY HOSPITAL.

BOREHOLE.

Depth 450 ft.

Internal diam. 6 ins.

Deepened from 325 in 1919 to 450 ft. in 1927.

Existing dug well lined with C.I. cylinders 63 ft. deep x 4'6" diam.

Water level 59'0" from surface in 1919.

Top of 6" pipe 61'0" below surface.

Water level December 1927 75'5"

Bottom of 6" pipe 201'6" from surface.

Data Bank

Middx 14 NE-E 255/115 TQ08/71

255
115

<u>Middlesex County Council Hospital.</u>
<u>Hillingdon.</u>

Visited, and the following facts ascertained:—

(1) There is only one source of supply at the moment and this is the 1904 well and boring (255/115c). The pump was lowered an additional 20 ft. in two in 1936 and on a 1 hr. test the yield was 2,300 gallons. This is situated beneath the water-tower and is sited on 6" Middx. 14 NE/E.

(2) There was no knowledge, on the spot, of the two older wells and bores which were at the Union (now part of the Hospital). Extensive enquiries were made by myself and Mr. Daglish the Engineer among the older members of the staff and search was made among old documents, but no definite information was obtained. It was discovered that there was an old well in the yard (at a spot shown on 6" Middx 14 NE/E) but this did not seem to be more than 15-16 ft. deep with 10 ft. of water and this may be the "well" referred to on attached sheet with extract from M.O.H. forms of 1935. In the opinion of the Engineer, however, the bottom of the well when sounded appeared hollow, which may mean that an old deeper well has been plugged and used as a drain.

There was also some indication that a well had been situated just E. of the Union in a spot now in the Cotham Road (approx sited on above map)

(3) A new bore is now in process of construction by Le Grands and had reached the Chalk from the site shown (255/115 d) on above map.* O.D. of this site is 160 ft. <u>Details of this should be obtained from Middx. Co. Council</u>, and as there is much confusion re. thickness of Reading Beds in this area, this new work should be considered very important.

L.S. Morris.
19.vi.41

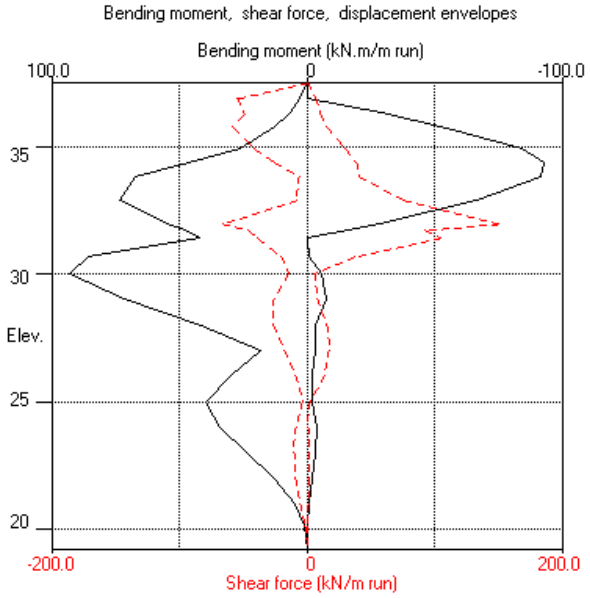
* See record attached
L.S.M.
Sept. 1941

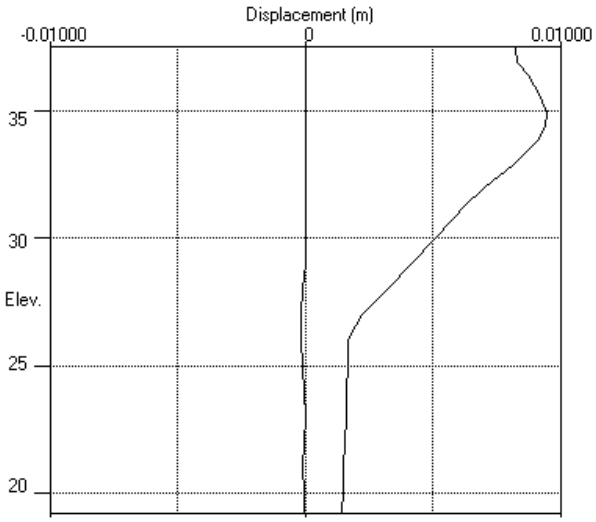
Date Bank

Appendix C – Arboricultural Impact Assessment Report

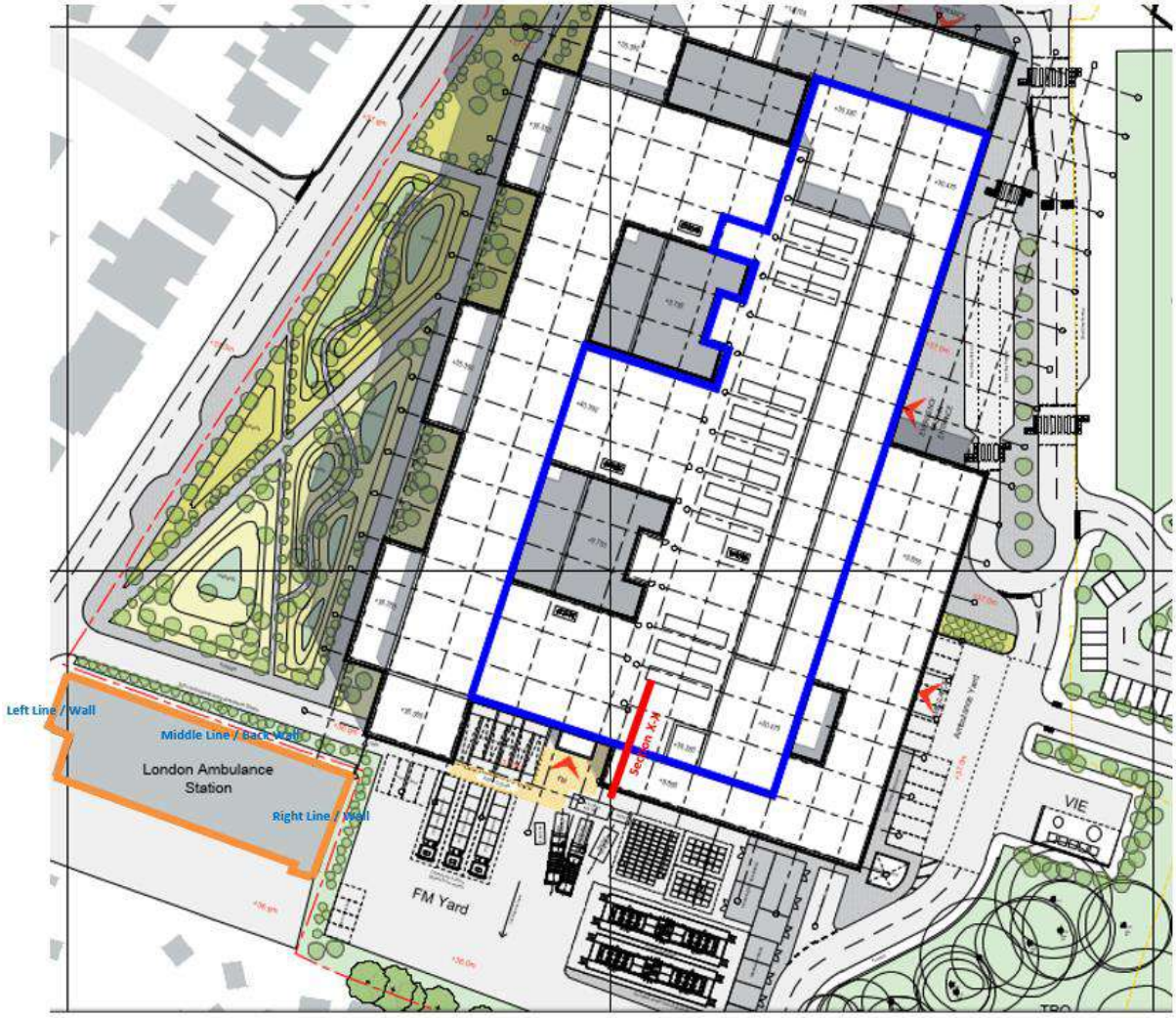
Report issued as separate attachment

Appendix D – WALLAP Results


Bending moment, shear force, displacement envelopes
Bending moment (kN.m/m run)
100.0
0
-100.0
35
30
Elev.
25
20
-200.0
0
200.0
Shear force (kN/m run)


Displacement (m)
-0.01000
0
0.01000
35
30
Elev.
25
20

Appendix E – XDisp Geometry


Left Line / Wall
Middle Line / Back Wall
London Ambulance Station
Right Line / Wall
FM Yard
Section X-X
Ambulance Yard
VIE

Appendix F – Groundsure Report

Groundsure LOCATION INTELLIGENCE

Enviro+Geo Insight

HILLINGDON HOSPITAL, ROYAL LANE, UXBRIDGE, UB8 3NN

Order Details

Date: 23/11/2020

Your ref: 1443418

Our Ref: GS-7305357

Client: Aecom Infrastructure and Environment UK Ltd

Site Details

Location: 506760 182011

Area: 9.61 ha

Authority: London Borough of Hillingdon

Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	1.1	Historical industrial land uses	4	12	15	42	-
17	1.2	Historical tanks	0	1	10	1	-
18	1.3	Historical energy features	3	0	11	9	-
19	1.4	Historical petrol stations	0	0	0	0	-
20	1.5	Historical garages	0	0	4	4	-
20	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
21	2.1	Historical industrial land uses	7	15	21	53	-
25	2.2	Historical tanks	0	1	10	1	-
26	2.3	Historical energy features	4	0	14	18	-
27	2.4	Historical petrol stations	0	0	0	0	-
28	2.5	Historical garages	0	0	5	5	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
29	3.1	Active or recent landfill	0	0	0	0	-
29	3.2	Historical landfill (BGS records)	0	0	0	0	-
30	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
30	3.4	Historical landfill (EA/NRW records)	0	0	0	1	-
30	3.5	Historical waste sites	0	0	0	0	-
30	3.6	Licensed waste sites	0	0	0	0	-
31	3.7	Waste exemptions	7	0	0	2	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
32	4.1	Recent industrial land uses	4	2	19	-	-
34	4.2	Current or recent petrol stations	0	0	1	0	-
34	4.3	Electricity cables	0	0	0	0	-
34	4.4	Gas pipelines	0	0	0	0	-
35	4.5	Sites determined as Contaminated Land	0	0	0	0	-

35	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
35	4.7	Regulated explosive sites	0	0	0	0	-
35	4.8	Hazardous substance storage/usage	0	0	0	0	-
35	**4.9**	**Historical licensed industrial activities (IPC)**	0	0	5	0	-
36	**4.10**	**Licensed industrial activities (Part A(1))**	0	0	5	0	-
37	**4.11**	**Licensed pollutant release (Part A(2)/B)**	1	0	0	1	-
38	**4.12**	**Radioactive Substance Authorisations**	0	0	8	0	-
39	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
40	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
40	**4.15**	**Pollutant release to public sewer**	0	0	1	0	-
40	**4.16**	**List 1 Dangerous Substances**	0	0	1	0	-
41	**4.17**	**List 2 Dangerous Substances**	0	0	1	0	-
41	**4.18**	**Pollution Incidents (EA/NRW)**	0	2	9	3	-
43	**4.19**	**Pollution inventory substances**	0	0	3	0	-
45	**4.20**	**Pollution inventory waste transfers**	0	0	1	0	-
45	**4.21**	**Pollution inventory radioactive waste**	0	0	1	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
47	**5.1**	**Superficial aquifer**	Identified (within 500m)				
49	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
50	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
51	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
52	**5.5**	**Groundwater vulnerability- local information**	Identified (within 0m)				
53	**5.6**	**Groundwater abstractions**	2	0	3	0	16
58	**5.7**	**Surface water abstractions**	0	0	0	0	2
59	**5.8**	**Potable abstractions**	2	0	3	0	0
61	**5.9**	**Source Protection Zones**	2	0	0	0	-
61	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
62	**6.1**	**Water Network (OS MasterMap)**	6	3	8	-	-

64	6.2	Surface water features	1	0	5	-	-
64	6.3	WFD Surface water body catchments	1	-	-	-	-
65	6.4	WFD Surface water bodies	0	0	0	-	-
65	6.5	WFD Groundwater bodies	1	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
66	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
66	7.2	Historical Flood Events	0	0	0	-	-
66	7.3	Flood Defences	0	0	0	-	-
66	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
67	7.5	Flood Storage Areas	0	0	0	-	-
68	7.6	Flood Zone 2	None (within 50m)				
68	7.7	Flood Zone 3	None (within 50m)				

Page	Section	Surface water flooding	
69	8.1	Surface water flooding	1 in 30 year, Greater than 1.0m (within 50m)

Page	Section	Groundwater flooding	
71	9.1	Groundwater flooding	Low (within 50m)

Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
72	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
73	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
73	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
73	10.4	Special Protection Areas (SPA)	0	0	0	0	0
73	10.5	National Nature Reserves (NNR)	0	0	0	0	0
74	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
74	10.7	Designated Ancient Woodland	0	0	0	0	0
74	10.8	Biosphere Reserves	0	0	0	0	0
74	10.9	Forest Parks	0	0	0	0	0
75	10.10	Marine Conservation Zones	0	0	0	0	0
75	10.11	Green Belt	0	1	3	1	12
76	10.12	Proposed Ramsar sites	0	0	0	0	0

76	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
76	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
76	10.15	Nitrate Sensitive Areas	0	0	0	0	0
77	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
78	**10.17**	**SSSI Impact Risk Zones**	1	-	-	-	-
79	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
80	11.1	World Heritage Sites	0	0	0	-	-
81	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
81	11.3	National Parks	0	0	0	-	-
81	**11.4**	**Listed Buildings**	1	1	0	-	-
82	**11.5**	**Conservation Areas**	0	0	1	-	-
82	11.6	Scheduled Ancient Monuments	0	0	0	-	-
82	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
83	**12.1**	**Agricultural Land Classification**	Grade 2 (within 250m)				
84	12.2	Open Access Land	0	0	0	-	-
84	12.3	Tree Felling Licences	0	0	0	-	-
84	**12.4**	**Environmental Stewardship Schemes**	0	0	1	-	-
85	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
86	**13.1**	**Priority Habitat Inventory**	0	0	3	-	-
87	13.2	Habitat Networks	0	0	0	-	-
87	13.3	Open Mosaic Habitat	0	0	0	-	-
87	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
88	**14.1**	**10k Availability**	Identified (within 500m)				
89	**14.2**	**Artificial and made ground (10k)**	1	1	3	8	-
91	**14.3**	**Superficial geology (10k)**	1	0	2	2	-

92	14.4	Landslip (10k)	0	0	0	0	-
93	14.5	Bedrock geology (10k)	1	0	0	0	-
94	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
95	15.1	50k Availability	Identified (within 500m)				
96	15.2	Artificial and made ground (50k)	0	0	2	2	-
97	15.3	Artificial ground permeability (50k)	0	0	-	-	-
98	15.4	Superficial geology (50k)	1	0	2	2	-
99	15.5	Superficial permeability (50k)	Identified (within 50m)				
99	15.6	Landslip (50k)	0	0	0	0	-
99	15.7	Landslip permeability (50k)	None (within 50m)				
100	15.8	Bedrock geology (50k)	1	0	0	0	-
101	15.9	Bedrock permeability (50k)	Identified (within 50m)				
101	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
102	16.1	BGS Boreholes	1	6	20	-	-
Page	Section	Natural ground subsidence					
104	17.1	Shrink swell clays	Low (within 50m)				
105	17.2	Running sands	Very low (within 50m)				
106	17.3	Compressible deposits	Negligible (within 50m)				
107	17.4	Collapsible deposits	Very low (within 50m)				
108	17.5	Landslides	Very low (within 50m)				
109	17.6	Ground dissolution of soluble rocks	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
111	18.1	Natural cavities	0	0	0	0	-
112	18.2	BritPits	0	0	0	3	-
112	18.3	Surface ground workings	2	5	23	-	-
114	18.4	Underground workings	0	0	0	0	0
114	18.5	Historical Mineral Planning Areas	0	0	0	0	-

114	18.6	Non-coal mining	0	0	0	0	0
114	18.7	Mining cavities	0	0	0	0	0
114	18.8	JPB mining areas	None (within 0m)				
115	18.9	Coal mining	None (within 0m)				
115	18.10	Brine areas	None (within 0m)				
115	18.11	Gypsum areas	None (within 0m)				
115	18.12	Tin mining	None (within 0m)				
115	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
116	**19.1**	**Radon**	Less than 1% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
117	**20.1**	**BGS Estimated Background Soil Chemistry**	3	1	-	-	-
117	**20.2**	**BGS Estimated Urban Soil Chemistry**	19	8	-	-	-
119	**20.3**	**BGS Measured Urban Soil Chemistry**	0	1	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
120	21.1	Underground railways (London)	0	0	0	-	-
120	21.2	Underground railways (Non-London)	0	0	0	-	-
120	21.3	Railway tunnels	0	0	0	-	-
120	21.4	Historical railway and tunnel features	0	0	0	-	-
120	21.5	Royal Mail tunnels	0	0	0	-	-
121	21.6	Historical railways	0	0	0	-	-
121	21.7	Railways	0	0	0	-	-
121	21.8	Crossrail 1	0	0	0	0	-
121	21.9	Crossrail 2	0	0	0	0	-
121	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 29/06/2019

Site Area: 9.61ha

Recent site history - 2017 aerial photograph

Capture Date: 21/06/2017

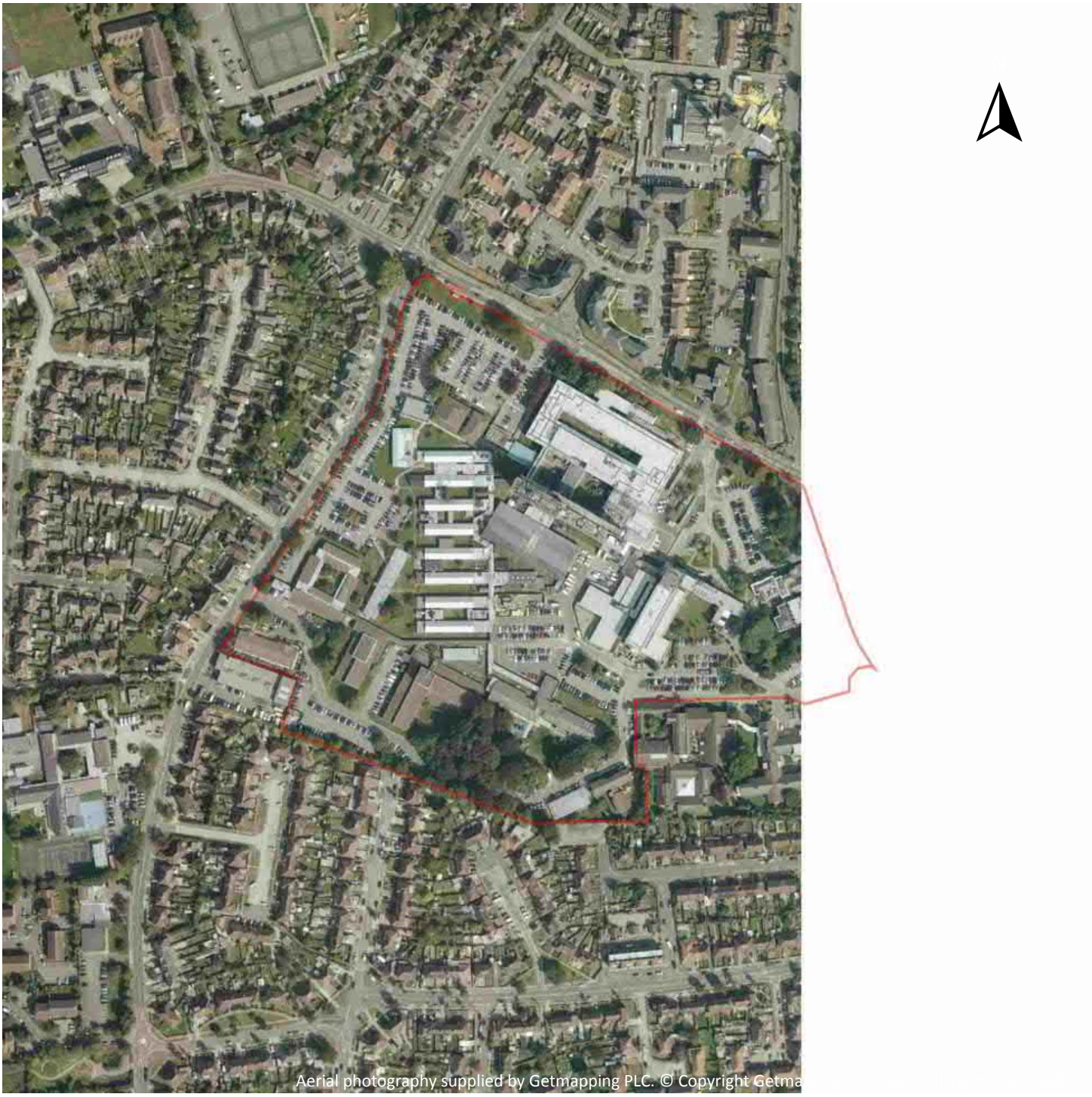
Site Area: 9.61ha

Recent site history - 2013 aerial photograph

Capture Date: 20/04/2013

Site Area: 9.61ha

Recent site history - 2010 aerial photograph



Capture Date: 01/09/2010

Site Area: 9.61ha

Recent site history - 1999 aerial photograph

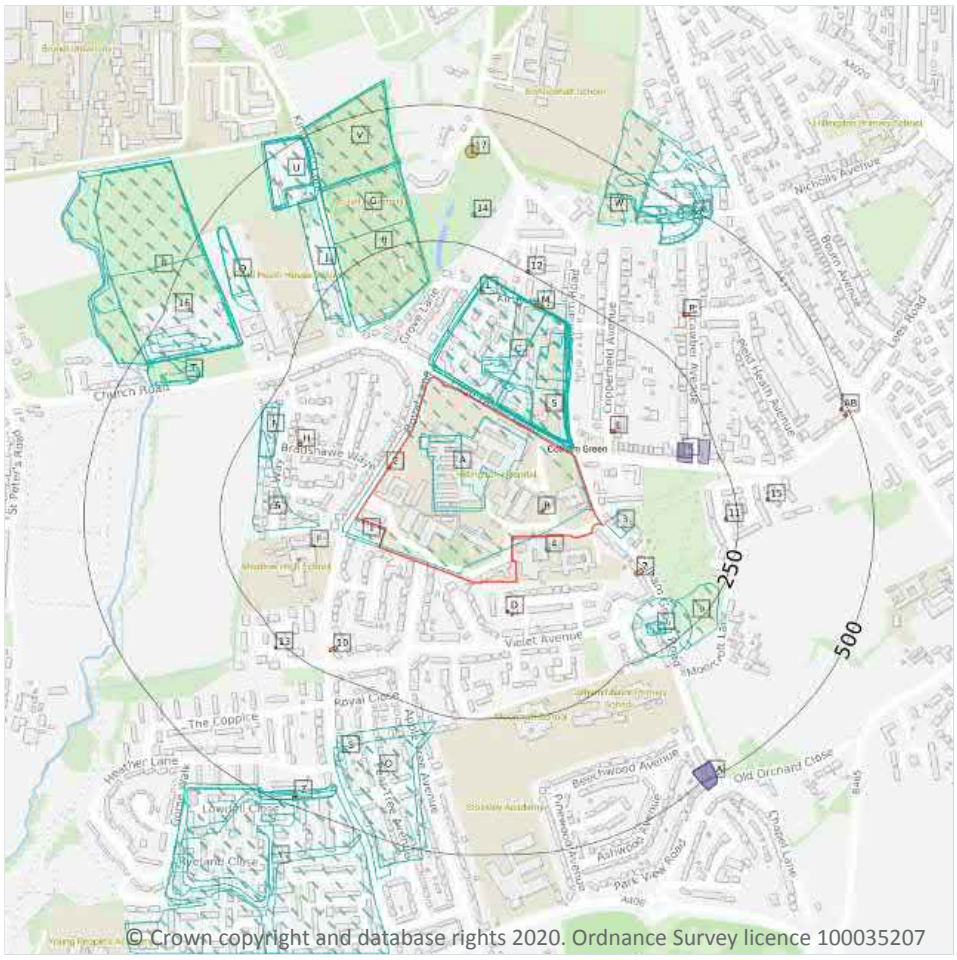
Capture Date: 13/10/1999

Site Area: 9.61ha

OS MasterMap site plan

Site Area: 9.61ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

1.1 Historical industrial land uses

Records within 500m	73

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Ambulance Station**	**1970 - 1989**	**2221599**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Hospital**	**1975 - 1989**	**2177193**
A	**On site**	**Hospital**	**1970**	**2211598**
A	**On site**	**Hospital**	**1959**	**2244274**
3	6m NE	Unspecified Works	1970	2159651
C	8m NE	Hospital	1935 - 1938	2277582
C	9m NE	Hospital	1938	2182737
C	9m NE	Unspecified Workhouse	1913	2191186
C	11m NE	Unspecified Commercial/Industrial	1970	2216572
C	11m NE	Unspecified Commercial/Industrial	1959	2277089
C	11m NE	Unspecified Workhouse	1895	2172044
C	11m NE	Hospital	1975 - 1989	2214099
C	12m NE	Unspecified Workhouse	1900 - 1913	2256753
C	13m NE	Infirmary	1932	2240953
C	16m NE	Union Workhouse	1897	2276596
4	20m S	Chimney	1989	2165081
C	55m NE	Infirmary	1913	2274968
6	69m W	Unspecified Heap	1959	2218085
C	74m NE	Unspecified Workhouse	1868	2277731
C	90m NE	Union Workhouse	1882	2176661
8	133m NW	Nursery	1935 - 1938	2236581
G	137m NW	Nursery	1938	2260541
I	162m SE	Smithy	1868	2181600
J	175m NW	Nursery	1913	2238412
J	179m NW	Nursery	1932	2277861
N	188m NW	Unspecified Ground Workings	1938	2281070
N	189m NW	Unspecified Heap	1935	2253129
I	194m SE	Smithy	1932	2270766
9	196m SE	Unspecified Pit	1970	2124945

ID	Location	Land use	Dates present	Group ID
I	198m SE	Smithy	1913	2193394
I	215m SE	Smithy	1882	2201345
O	264m S	Brick Field	1882	2291683
O	287m S	Brick Field	1868	2205225
G	288m N	Nursery	1959	2208447
14	303m N	Unspecified Tank	1868	2154554
Q	335m NW	Unspecified Pit	1913	2292140
R	344m W	Nursery	1913	2282132
R	345m W	Nursery	1935 - 1959	2268077
R	348m W	Nurseries	1970 - 1989	2220984
R	350m W	Nursery	1938	2198043
16	351m W	Nursery	1932	2259613
Q	362m NW	Unspecified Pit	1913	2261932
Q	368m NW	Unspecified Pit	1932	2268504
S	369m S	Wash Mill	1882	2164555
T	381m NW	Unspecified Heap	1938	2136320
T	382m NW	Unspecified Heaps	1935	2191842
T	384m NW	Unspecified Ground Workings	1938	2231353
S	384m S	Unspecified Mill	1868	2140627
U	389m NW	Nursery	1913	2282878
U	392m NW	Nursery	1932 - 1935	2228402
V	392m N	Nursery	1913	2199942
W	393m NE	Unspecified Heap	1970	2136308
V	395m N	Nursery	1932	2184559
T	396m NW	Gravel Pit	1868	2181365
T	399m NW	Gravel Pit	1882	2256073
U	411m NW	Nursery	1938	2175689
U	414m NW	Nursery	1938	2190323

ID	Location	Land use	Dates present	Group ID
U	415m NW	Nursery	1959	2177993
X	417m NE	Refuse Heap	1938	2173407
X	419m NE	Unspecified Ground Workings	1935	2259709
X	419m NE	Unspecified Ground Workings	1938	2238857
X	428m NE	Corporation Yard	1970	2290942
X	432m NE	Corporation Yard	1989	2256077
Y	436m S	Unspecified Ground Workings and Heap	1935	2138420
Z	438m S	Gravel Pit	1938	2173115
W	441m NE	Unspecified Ground Workings	1938	2280810
Y	447m S	Unspecified Ground Workings	1970	2272819
X	448m NE	Unspecified Heap	1938	2136313
X	451m NE	Unspecified Heap	1938	2136307
Y	476m S	Gravel Pit	1882	2185852
W	476m NE	Unspecified Heap	1938	2136309
X	477m NE	Unspecified Heap	1938	2136312
Y	498m S	Gravel Pit	1868	2177343

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**12**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
5	48m NE	Unspecified Tank	1895	363781
F	91m SW	Unspecified Tank	1973	400707

ID	Location	Land use	Dates present	Group ID
F	91m SW	Unspecified Tank	1979	398479
F	128m SW	Unspecified Tank	1992	391217
F	129m SW	Unspecified Tank	1988	401016
C	135m NE	Unspecified Tank	1935	363782
L	180m NE	Unspecified Tank	-	359064
L	180m NE	Unspecified Tank	1988	363784
M	203m NE	Tanks	-	358824
M	203m NE	Tanks	1988	376139
12	249m NE	Unspecified Tank	1988	363783
17	408m N	Unspecified Tank	1965	363842

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**23**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
2	**On site**	**Electricity Substation**	**1973 - 1979**	**274675**
B	**On site**	**Electricity Substation**	**1979**	**244094**
B	**On site**	**Electricity Substation**	**1973**	**244095**
D	52m S	Electricity Substation	1979	244093
D	59m S	Electricity Substation	1973	244092
E	78m NE	Electricity Substation	1973	265369
E	84m NE	Electricity Substation	1996	264084
7	106m SE	Electricity Substation	1973 - 1996	278417

ID	Location	Land use	Dates present	Group ID
H	156m NW	Electricity Substation	1992	253265
H	158m NW	Electricity Substation	1988	254456
M	187m NE	Electricity Substation	-	240873
M	187m NE	Electricity Substation	1988	244096
10	197m SW	Electricity Substation	1973 - 1979	279399
11	225m E	Electricity Substation	1973 - 1996	283601
13	262m SW	Electricity Substation	1988 - 1992	258177
15	305m E	Electricity Substation	1973 - 1996	260400
P	326m NE	Electricity Substation	1985 - 1992	267490
P	326m NE	Electricity Substation	-	240439
Z	482m S	Electricity Substation	1971 - 1996	257938
AB	485m NE	Electricity Substation	1996	244091
AB	488m NE	Electricity Substation	1973	255953
AB	492m NE	Electricity Substation	1984	253495
AB	492m NE	Electricity Substation	1994	256464

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	**0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	8

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
K	175m E	Garage	1965	74954
K	178m E	Garage	1964	74802
K	178m E	Garage	1973 - 1996	82936
K	211m E	Garage	1996	73307
AA	471m SE	Garage	-	72944
AA	471m SE	Garage	1993 - 1994	84396
AA	473m SE	Garage	1965	76944
AA	473m SE	Garage	1964	78145

This data is sourced from Ordnance Survey / Groundsure.

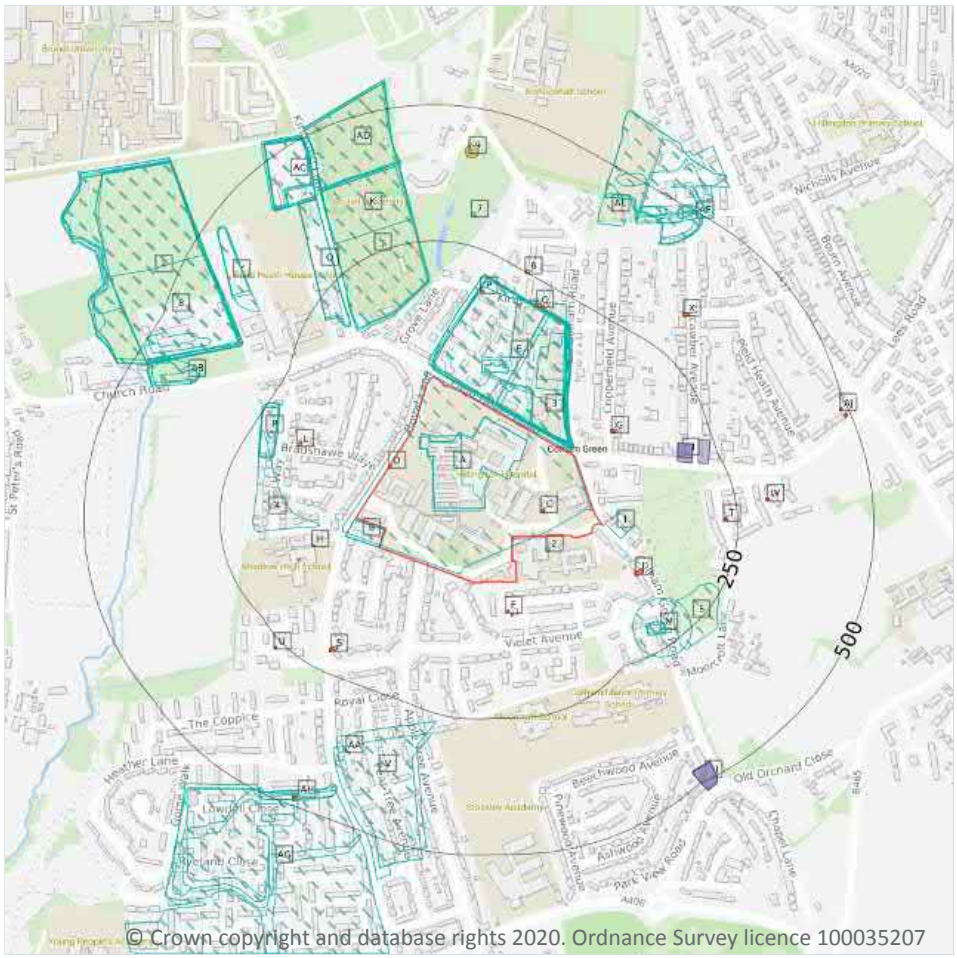
1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

2.1 Historical industrial land uses

Records within 500m	96

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Hospital**	**1989**	**2177193**
A	**On site**	**Hospital**	**1975**	**2177193**
A	**On site**	**Hospital**	**1970**	**2211598**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Hospital**	**1959**	**2244274**
B	**On site**	**Ambulance Station**	**1989**	**2221599**
B	**On site**	**Ambulance Station**	**1975**	**2221599**
B	**On site**	**Ambulance Station**	**1970**	**2221599**
1	6m NE	Unspecified Works	1970	2159651
E	8m NE	Hospital	1935	2277582
E	9m NE	Hospital	1938	2182737
E	9m NE	Unspecified Workhouse	1913	2191186
E	11m NE	Unspecified Commercial/Industrial	1970	2216572
E	11m NE	Unspecified Commercial/Industrial	1959	2277089
E	11m NE	Unspecified Workhouse	1895	2172044
E	11m NE	Hospital	1989	2214099
E	11m NE	Hospital	1975	2214099
E	12m NE	Unspecified Workhouse	1900	2256753
E	12m NE	Hospital	1938	2277582
E	13m NE	Infirmary	1932	2240953
E	16m NE	Union Workhouse	1897	2276596
2	20m S	Chimney	1989	2165081
E	48m NE	Unspecified Workhouse	1913	2256753
E	55m NE	Infirmary	1913	2274968
E	55m NE	Infirmary	1913	2274968
4	69m W	Unspecified Heap	1959	2218085
E	74m NE	Unspecified Workhouse	1868	2277731
E	90m NE	Union Workhouse	1882	2176661
J	133m NW	Nursery	1935	2236581
K	137m NW	Nursery	1938	2260541
J	138m NW	Nursery	1938	2236581
M	162m SE	Smithy	1868	2181600

ID	Location	Land Use	Date	Group ID
O	175m NW	Nursery	1913	2238412
O	177m NW	Nursery	1913	2238412
O	179m NW	Nursery	1932	2277861
R	188m NW	Unspecified Ground Workings	1938	2281070
R	189m NW	Unspecified Heap	1935	2253129
R	189m NW	Unspecified Heap	1935	2253129
R	191m NW	Unspecified Ground Workings	1938	2281070
M	194m SE	Smithy	1932	2270766
5	196m SE	Unspecified Pit	1970	2124945
M	198m SE	Smithy	1913	2193394
M	198m SE	Smithy	1913	2193394
M	215m SE	Smithy	1882	2201345
V	264m S	Brick Field	1882	2291683
V	287m S	Brick Field	1868	2205225
K	288m N	Nursery	1959	2208447
7	303m N	Unspecified Tank	1868	2154554
Y	335m NW	Unspecified Pit	1913	2292140
Z	344m W	Nursery	1913	2282132
Z	345m W	Nursery	1935	2268077
Z	348m W	Nurseries	1989	2220984
Z	348m W	Nurseries	1975	2220984
Z	348m W	Nurseries	1970	2220984
Z	350m W	Nursery	1938	2268077
Z	350m W	Nursery	1938	2198043
Z	350m W	Nursery	1913	2282132
Z	350m W	Nursery	1959	2268077
8	351m W	Nursery	1932	2259613
Y	362m NW	Unspecified Pit	1913	2261932

ID	Location	Land Use	Date	Group ID
Y	368m NW	Unspecified Pit	1932	2268504
AA	369m S	Wash Mill	1882	2164555
AB	381m NW	Unspecified Heap	1938	2136320
AB	382m NW	Unspecified Heaps	1935	2191842
AB	382m NW	Unspecified Heaps	1935	2191842
AB	384m NW	Unspecified Ground Workings	1938	2231353
AA	384m S	Unspecified Mill	1868	2140627
AC	389m NW	Nursery	1913	2282878
AC	391m NW	Nursery	1913	2282878
AC	392m NW	Nursery	1935	2228402
AD	392m N	Nursery	1913	2199942
AD	392m N	Nursery	1913	2199942
AE	393m NE	Unspecified Heap	1970	2136308
AC	394m NW	Nursery	1932	2228402
AD	395m N	Nursery	1932	2184559
AB	396m NW	Gravel Pit	1868	2181365
AB	399m NW	Gravel Pit	1882	2256073
AC	411m NW	Nursery	1938	2175689
AC	414m NW	Nursery	1938	2190323
AC	415m NW	Nursery	1959	2177993
AF	417m NE	Refuse Heap	1938	2173407
AF	419m NE	Unspecified Ground Workings	1935	2259709
AF	419m NE	Unspecified Ground Workings	1935	2259709
AF	419m NE	Unspecified Ground Workings	1938	2238857
AF	428m NE	Corporation Yard	1970	2290942
AF	432m NE	Corporation Yard	1989	2256077
AG	436m S	Unspecified Ground Workings and Heap	1935	2138420
AH	438m S	Gravel Pit	1938	2173115

ID	Location	Land Use	Date	Group ID
AE	441m NE	Unspecified Ground Workings	1938	2280810
AB	442m NW	Unspecified Ground Workings	1938	2231353
AG	447m S	Unspecified Ground Workings	1970	2272819
AF	448m NE	Unspecified Heap	1938	2136313
AF	451m NE	Unspecified Heap	1938	2136307
AG	476m S	Gravel Pit	1882	2185852
AE	476m NE	Unspecified Heap	1938	2136309
AF	477m NE	Unspecified Heap	1938	2136312
AG	498m S	Gravel Pit	1868	2177343

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**12**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
3	48m NE	Unspecified Tank	1895	363781
H	91m SW	Unspecified Tank	1973	400707
H	91m SW	Unspecified Tank	1979	398479
H	128m SW	Unspecified Tank	1992	391217
H	129m SW	Unspecified Tank	1988	401016
E	135m NE	Unspecified Tank	1935	363782
P	180m NE	Unspecified Tank	-	359064
P	180m NE	Unspecified Tank	1988	363784
Q	203m NE	Tanks	-	358824
Q	203m NE	Tanks	1988	376139
6	249m NE	Unspecified Tank	1988	363783

ID	Location	Land Use	Date	Group ID
9	408m N	Unspecified Tank	1965	363842

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**36**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
C	**On site**	**Electricity Substation**	**1973**	**244095**
C	**On site**	**Electricity Substation**	**1979**	**244094**
D	**On site**	**Electricity Substation**	**1973**	**274675**
D	**On site**	**Electricity Substation**	**1979**	**274675**
F	52m S	Electricity Substation	1979	244093
F	59m S	Electricity Substation	1973	244092
G	78m NE	Electricity Substation	1973	265369
G	84m NE	Electricity Substation	1996	264084
I	106m SE	Electricity Substation	1996	278417
I	108m SE	Electricity Substation	1973	278417
L	156m NW	Electricity Substation	1992	253265
L	158m NW	Electricity Substation	1988	254456
Q	187m NE	Electricity Substation	-	240873
Q	187m NE	Electricity Substation	1988	244096
S	197m SW	Electricity Substation	1979	279399
S	197m SW	Electricity Substation	1973	279399
T	225m E	Electricity Substation	1996	283601
T	225m E	Electricity Substation	1973	283601
U	262m SW	Electricity Substation	1992	258177

ID	Location	Land Use	Date	Group ID
U	263m SW	Electricity Substation	1988	258177
W	305m E	Electricity Substation	1996	260400
W	306m E	Electricity Substation	1973	260400
X	326m NE	Electricity Substation	1985	267490
X	326m NE	Electricity Substation	1992	267490
X	326m NE	Electricity Substation	-	240439
AH	482m S	Electricity Substation	1991	257938
AH	482m S	Electricity Substation	1971	257938
AH	482m S	Electricity Substation	1989	257938
AH	482m S	Electricity Substation	1990	257938
AH	482m S	Electricity Substation	1989	257938
AH	484m S	Electricity Substation	1996	257938
AH	484m S	Electricity Substation	1993	257938
AJ	485m NE	Electricity Substation	1996	244091
AJ	488m NE	Electricity Substation	1973	255953
AJ	492m NE	Electricity Substation	1984	253495
AJ	492m NE	Electricity Substation	1994	256464

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	**0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	**10**

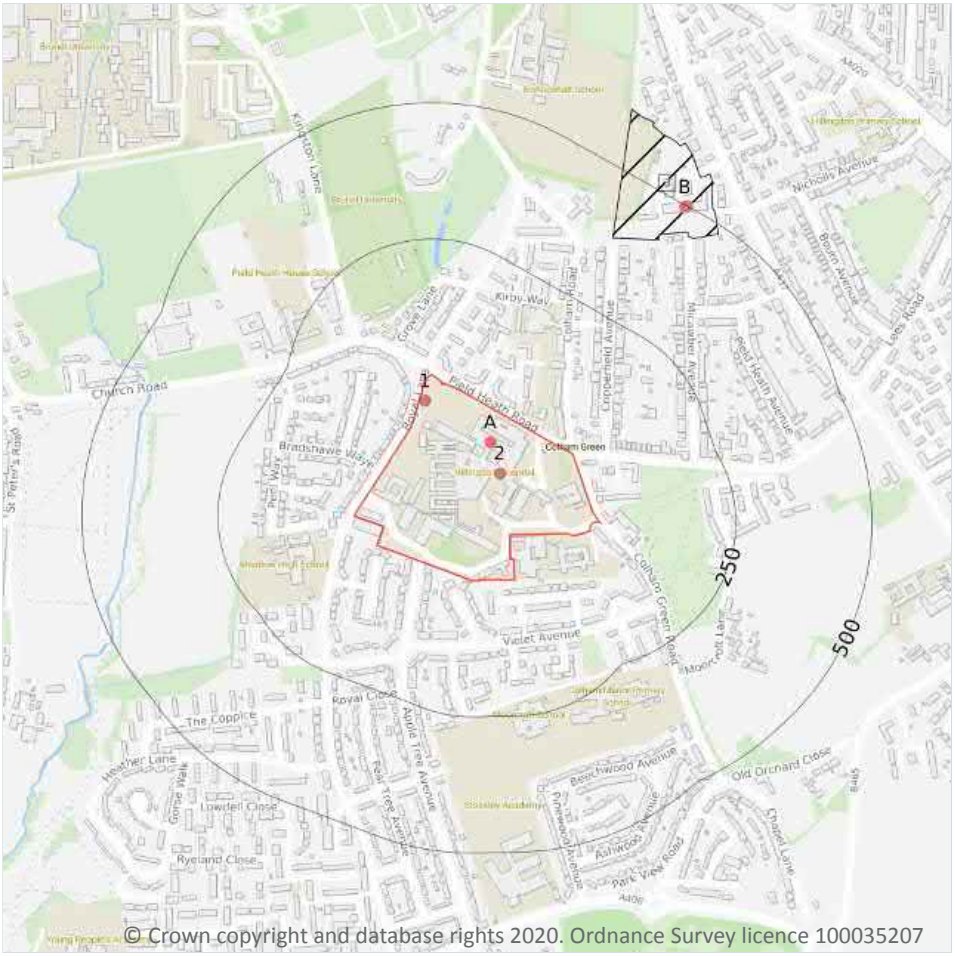
Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
N	175m E	Garage	1965	74954
N	178m E	Garage	1996	82936
N	178m E	Garage	1964	74802
N	178m E	Garage	1973	82936
N	211m E	Garage	1996	73307
AI	471m SE	Garage	-	72944
AI	471m SE	Garage	1994	84396
AI	471m SE	Garage	1993	84396
AI	473m SE	Garage	1965	76944
AI	473m SE	Garage	1964	78145

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	1

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on **page 29**

ID	Location	Details		
3	381m NE	Site Address: Harlington Road, Hillingdon, London Licence Holder Address: -	Waste Licence: - Site Reference: 8HI023, HIL028 Waste Type: Commercial, Household Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: - First Recorded - Last Recorded: -

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	9

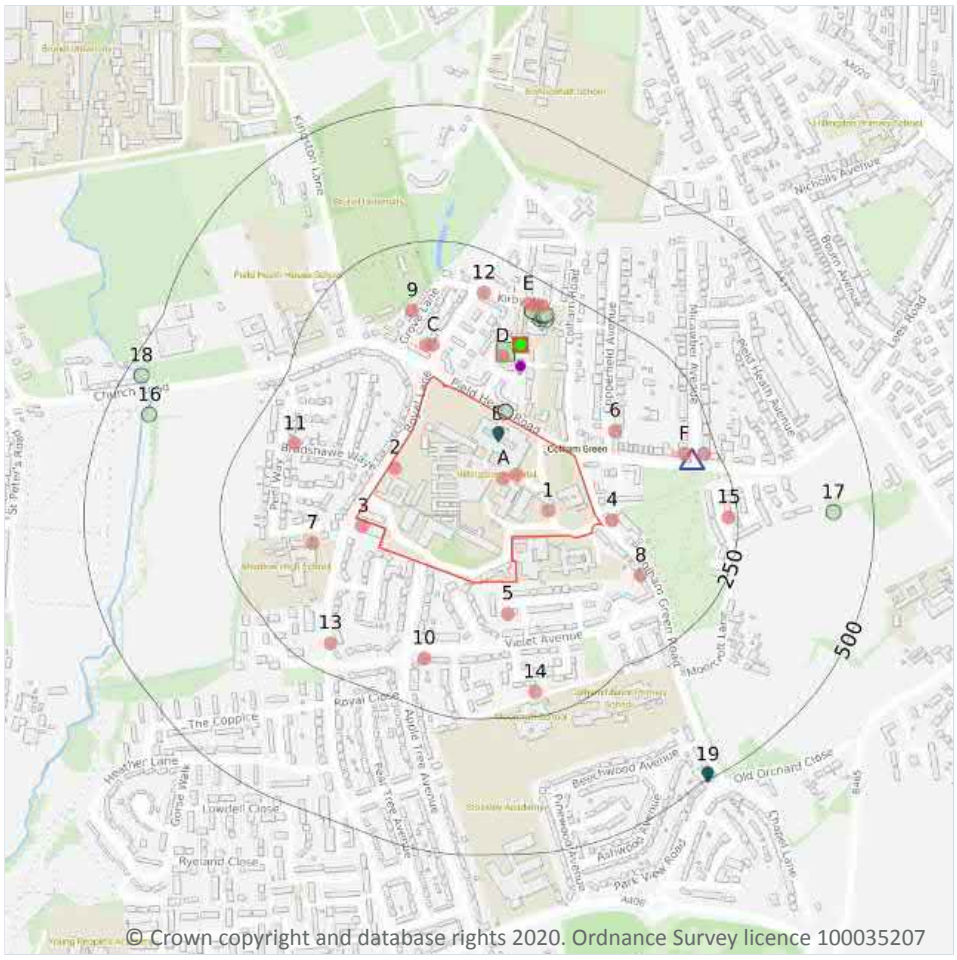
Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 29**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	**On site**	**Hillingdon Hospital NHS Trust Pield Heath Road UXBRIDGE Middlesex UB8 3NN**	**EPR/QE5988ZD/A001**	**Treating waste exemption**	**Non-Agricultural Waste Only**	**Sorting and de-naturing of controlled drugs for disposal**
2	**On site**	**Hawthorn Intermediate Care Unit The Woodlands Centre Pield Heath Road UB83NN**	**EPR/HE5586RE/A001**	**Treating waste exemption**	**Non-Agricultural Waste Only**	**Sorting and de-naturing of controlled drugs for disposal**
A	**On site**	**PIELD HEATH ROAD, UXBRIDGE, UB8 3NN**	**WEX202797**	**Treating waste exemption**	**Not on a farm**	**Sorting and de-naturing of controlled drugs for disposal**
A	**On site**	**PIELD HEATH ROAD, UXBRIDGE, UB8 3NN**	**WEX072858**	**Disposing of waste exemption**	**Not on a farm**	**Disposal by incineration**
A	**On site**	**PIELD HEATH ROAD, UXBRIDGE, UB8 3NN**	**WEX072858**	**Storing waste exemption**	**Not on a farm**	**Storage of waste in secure containers**
A	**On site**	**PIELD HEATH ROAD, UXBRIDGE, UB8 3NN**	**WEX072858**	**Storing waste exemption**	**Not on a farm**	**Storage of waste in a secure place**
A	**On site**	**PIELD HEATH ROAD, UXBRIDGE, UB8 3NN**	**WEX053104**	**Treating waste exemption**	**Not on a farm**	**Sorting and de-naturing of controlled drugs for disposal**
B	495m NE	Central Depot Maintenance Depot 128 Harlington Road UXBRIDGE Middlesex UB8 3EU	EPR/KE5089WR/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
B	499m NE	MAINTENANCE DEPOT, 128, HARLINGTON ROAD, UXBRIDGE, UB8 3EU	WEX078477	Storing waste exemption	Not on a farm	Storage of waste in a secure place

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



Site Outline

Search buffers in metres (m)

- Recent industrial land uses
- Current or recent petrol stations
- Historical licensed industrial activities
- Part A(1) industrial activities
- Licensed pollutant release (Part A(2)/B)
- Radioactive Substance Authorisations
- Pollutant release to public sewer
- List 1 Dangerous Substances
- List 2 Dangerous Substances
- Pollution Incidents (EA/NRW)
- Pollution inventory substances
- Pollution inventory waste transfers
- Pollution inventory radioactive waste

4.1 Recent industrial land uses

Records within 250m	25

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Company	Address	Activity	Category
1	On site	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities
2	On site	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities
A	On site	Hillingdon Hospital	Pield Heath Road, Uxbridge, Greater London, UB8 3NN	Hospitals	Health Practitioners and Establishments

ID	Location	Company	Address	Activity	Category
A	**On site**	**Hillingdon Hospital**	**Pield Heath Road, Uxbridge, Greater London, UB8 3NN**	**Accident and Emergency Hospitals**	**Health Practitioners and Establishments**
3	10m S	Hillingdon Ambulance Station	Royal Lane, Uxbridge, Greater London, UB8 3QX	Ambulance and Medical Transportation Services	Health Support Services
4	21m NE	Tri Control Systems Ltd	Colham Green House, Colham Green Road, Uxbridge, Greater London, UB8 3QQ	Electrical Components	Industrial Products
5	58m S	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities
C	59m N	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities
C	61m N	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities
6	88m NE	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities
7	93m SW	Tank	Greater London, UB8	Tanks (Generic)	Industrial Features
D	94m NE	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities
8	118m SE	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities
9	128m N	Bowles	Weetanbark, Grove Lane, Uxbridge, Greater London, UB8 3RG	Clearance and Salvage Dealers	Recycling Services
10	163m S	Quality Motor Co Ltd	108, Apple Tree Avenue, Uxbridge, Greater London, UB8 3PU	New Vehicles	Motoring
11	168m NW	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities
12	179m NE	Tank	Greater London, UB8	Tanks (Generic)	Industrial Features
F	191m E	Morgans Garage	52, Pield Heath Road, Uxbridge, Greater London, UB8 3NQ	Petrol and Fuel Stations	Road and Rail
13	197m SW	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities
E	202m NE	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities
14	205m S	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities
E	206m NE	Tank	Greater London, UB8	Tanks (Generic)	Industrial Features

ID	Location	Company	Address	Activity	Category
E	210m NE	Tank	Greater London, UB8	Tanks (Generic)	Industrial Features
F	226m E	Charles Stuart Autos Ltd	48-54, Pield Heath Road, Uxbridge, Greater London, UB8 3NG	New Vehicles	Motoring
15	234m E	Electricity Sub Station	Greater London, UB8	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	**1**

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Company	Address	LPG	Status
F	200m E	MURCO	52-54, Pield Heath Road, Micawbers Avenue, Colham Green, Hillingdon, Outer London, UB8 3NG	No	Open

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	**0**

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	**0**

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	5

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Details	
D	127m NE	Operator: Clinical Energy Ltd Address: Hillingdon Hospital (the Incinerator), Pield Heath Road, Hillingdon, Uxbridge, Middlesex, UB8 3NN Process: Incineration Permit Number: AG8675	Original Permit Number: IPCAIRAPP Date Approved: 18-6-1993 Effective Date: 18-6-1993 Status: Superseded By Variation
D	127m NE	Operator: Clinical Energy Ltd Address: Hillingdon Hospital (the Incinerator), Pield Heath Road, Hillingdon, Uxbridge, Middlesex, UB8 3NN Process: Incineration Permit Number: AO4038	Original Permit Number: IPCMINVAR Date Approved: 24-1-1995 Effective Date: 1-3-1995 Status: Superseded By Variation
D	127m NE	Operator: Clinical Energy Ltd Address: Hillingdon Hospital (the Incinerator), Pield Heath Road, Hillingdon, Uxbridge, Middlesex, UB8 3NN Process: Incineration Permit Number: BC9976	Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Superseded By Variation
D	127m NE	Operator: Clinical Energy Ltd Address: Hillingdon Hospital (the Incinerator), Pield Heath Road, Hillingdon, Uxbridge, Middlesex, UB8 3NN Process: Incineration Permit Number: BI3466	Original Permit Number: IPCMINVAR Date Approved: 19-6-2000 Effective Date: 30-6-2000 Status: Superseded By Variation
D	127m NE	Operator: Clinical Energy Ltd Address: Hillingdon Hospital (the Incinerator), Pield Heath Road, Hillingdon, Uxbridge, Middlesex, UB8 3NN Process: Incineration Permit Number: BJ3675	Original Permit Number: IPCMINVAR Date Approved: 7-3-2003 Effective Date: 10-3-2003 Status: Revoked - Now Ippc

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	**5**

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Details	
D	92m NE	Operator: CLINICAL ENERGY LIMITED Installation Name: HILLINGDON CLINICAL WASTE INCINERATOR Process: ASSOCIATED PROCESS Permit Number: KP3530BU Original Permit Number: KP3530BU	EPR Reference: - Issue Date: 16/12/2005 Effective Date: 16/12/2005 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	92m NE	Operator: CLINICAL ENERGY LIMITED Installation Name: HILLINGDON CLINICAL WASTE INCINERATOR Process: INCINERATION OF HAZARDOUS WASTE Permit Number: KP3530BU Original Permit Number: KP3530BU	EPR Reference: - Issue Date: 16/12/2005 Effective Date: 16/12/2005 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	92m NE	Operator: SRCL LTD Installation Name: HILLINGDON CLINICAL WASTE INCINERATOR Process: INCINERATION OF HAZARDOUS WASTE Permit Number: SP3030XB Original Permit Number: LP3037UU	EPR Reference: - Issue Date: 19/03/2008 Effective Date: 14/03/2008 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	92m NE	Operator: SRCL LTD Installation Name: HILLINGDON CLINICAL WASTE INCINERATOR Process: INCINERATION OF HAZARDOUS WASTE Permit Number: LP3037UU Original Permit Number: LP3037UU	EPR Reference: - Issue Date: 28/09/2007 Effective Date: 28/09/2007 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
E	182m NE	Operator: SRCL LTD Installation Name: HILLINGDON CLINICAL WASTE INCINERATOR - EPR/LP3037UU Process: INCINERATION OF HAZARDOUS WASTE Permit Number: JP3930GW Original Permit Number: LP3037UU	EPR Reference: EA/EPR/LP3037UU/V003 Issue Date: 04/05/2009 Effective Date: 04/05/2009 Last date noted as effective: 26/10/2020 Status: EFFECTIVE

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	**2**

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Address	Details	
B	**On site**	**Hillingdon Hospital, Pied Heath Rd**	**Process: Combustion & Incineration** **Status: Historical Permit** **Permit Type: Part B**	**Enforcement: No Enforcement Notified** **Date of enforcement: No Enforcement Notified** **Comment: No Enforcement Notified**
19	491m SE	Colham Self Service Ltd, 148 Colham Green Road, Hillingdon, UB8 3LJ	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m **8**

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Address	Details	
D	127m NE	Pield Heath Road, Hillingdon, Uxbridge, UB8 3NN	Operator: Hillingdon Hospital NHS Foundation Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: BW7384 Date of approval: 01/12/2003	Effective from: 01/01/2004 Last date of update: 01/01/2020 Status: Issued
D	127m NE	Pield Heath Road, Hillingdon, Uxbridge, UB8 3NN	Operator: Hillingdon Hospital NHS Foundation Trust Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: CD7132 Date of approval: 15/06/2009	Effective from: 15/06/2009 Last date of update: 01/01/2020 Status: Issued
D	127m NE	Hillingdon Hospital Nhs Trust, Pield Heath Road,hillingdon,uxbridge, London, UB8 3NN	Operator: Hillingdon Hospital Nhs Trust Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: AA5606 Date of approval: 10/07/1996	Effective from: 10/07/1996 Last date of update: 01/01/2015 Status: Superseded By Variation

ID	Location	Address	Details	
D	127m NE	Hillingdon Hospital Nhs Trust, Pield Heath Road,hillingdon,uxbridge, London, UB8 3NN	Operator: Hillingdon Hospital Nhs Trust Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: AA5606 Date of approval: 01/12/2008	Effective from: 01/12/2008 Last date of update: 01/01/2015 Status: Superseded By Variation
D	127m NE	Bfh Incineration Ltd, Hillingdon Hospital (the Incinerator), Pield Heath Road, Hillingdon, Uxbridge, Middlesex, UB8 3NN	Operator: Bfh Incineration Ltd Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AB2629 Date of approval: 06/06/1992	Effective from: 12/06/1992 Last date of update: 01/01/2015 Status: Superseded By Variation
D	127m NE	Bfh Incineration Ltd, Hillingdon Hospital (the Incinerator), Pield Heath Road, Hillingdon, Uxbridge, Middlesex, UB8 3NN	Operator: Bfh Incineration Ltd Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AB2629 Date of approval: 04/01/1996	Effective from: 07/01/1996 Last date of update: 01/01/2015 Status: Superseded By Variation
D	127m NE	Bfh Incineration Ltd, Hillingdon Hospital (the Incinerator), Pield Heath Road, Hillingdon, Uxbridge, Middlesex, UB8 3NN	Operator: Bfh Incineration Ltd Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AB2629 Date of approval: 01/12/2003	Effective from: 01/01/2004 Last date of update: 01/01/2015 Status: Revoked/cancelled
D	127m NE	Hillingdon Hospital Nhs Trust, Pield Heath Road, Hillingdon, Uxbridge, Middlesex, UB8 3NN	Operator: Hillingdon Hospital Nhs Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AU1178 Date of approval: 10/07/1996	Effective from: 11/07/1996 Last date of update: 01/01/2015 Status: Superseded By Variation

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	**0**

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	1

Discharges of Special Category Effluents to the public sewer.

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Address	Details	
D	127m NE	SRCL LTD, HILLINGDON HOSPITAL (THE INCINERATOR), PIELD HEATH ROAD, HILLINGDON, UXBRIDGE, MIDDLESEX, UB8 3NN	Permission reference: CC6645 Local Authority: LONDON BOROUGH OF HILLINGDON First received date: 02/07/2008	Last received date: 01/01/2018 Status: DEAD (APPLICATION)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	1

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Name	Status	Receiving Water	Authorised Substances
D	128m NE	Clinical Energy Ltd, Hillingdon Hospital, Pield Heath Rd	Not Active	Thames Estuary	Mercury (other), Cadmium

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	**1**

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Name	Status	Receiving Water	Authorised Substances
D	103m NE	Clinical Energy Ltd, Hillingdon Hospital, Uxbridge	Not Active	-	Chromium, Copper, Lead, Nickel, Zinc

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	**14**

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Details	
B	8m NE	Incident Date: 31/07/2001 Incident Identification: 23736 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
B	8m NE	Incident Date: 31/07/2001 Incident Identification: 23736 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
E	187m NE	Incident Date: 16/12/2001 Incident Identification: 51270 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
E	192m NE	Incident Date: 03/04/2006 Incident Identification: 388113 Pollutant: Other Pollutant Pollutant Description: Noise	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
E	193m NE	Incident Date: 15/07/2001 Incident Identification: 23742 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Dust	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

ID	Location	Details	
E	193m NE	Incident Date: 15/07/2001 Incident Identification: 23742 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Dust	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
E	193m NE	Incident Date: 30/10/2001 Incident Identification: 40627 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
E	193m NE	Incident Date: 30/10/2001 Incident Identification: 40627 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
E	195m NE	Incident Date: 02/08/2006 Incident Identification: 423748 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
E	197m NE	Incident Date: 02/08/2006 Incident Identification: 423746 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
E	199m NE	Incident Date: 03/04/2006 Incident Identification: 388112 Pollutant: Other Pollutant Pollutant Description: Noise	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
16	424m NW	Incident Date: 18/08/2019 Incident Identification: 1730361 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
17	426m E	Incident Date: 30/07/2001 Incident Identification: 20205 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
18	472m NW	Incident Date: 25/10/2003 Incident Identification: 198133 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	3

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 32**

ID: D, Location: 93m NE, Permit: LP3037UU
Operator: SRCL LTD
Activity: THE INCINERATION OF HAZARDOUS WASTE IN AN INCINERATION OR CO-INCINERATION PLANT WITH A CAPACITY EXCEEDING 10 TONNES PER DAY
Address: Hillingdon Clinical Waste Incinerator Pield Heath Road Uxbridge Middlesex UB8 3NN
Sector EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Carbon monoxide	100000kg	Below Reporting Threshold
Air	Nitrogen oxides (NO and NO2) as NO2	100000kg	Below Reporting Threshold
Air	Anthracene	10kg	Below Reporting Threshold
Air	Arsenic	1kg	Below Reporting Threshold
Air	Cadmium	1kg	Below Reporting Threshold
Air	Chromium	10kg	Below Reporting Threshold
Air	Copper	10kg	Below Reporting Threshold
Air	Lead	100kg	Below Reporting Threshold
Air	Nickel	10kg	Below Reporting Threshold
Air	Zinc	100kg	Below Reporting Threshold
Air	Chlorine and inorganic chlorine compounds - as HCl	10000kg	Below Reporting Threshold
Air	Fluorine and inorganic fluorine compounds - as HF	1000kg	Below Reporting Threshold
Air	Non-methane volatile organic compounds (NMVOCs)	10000kg	Below Reporting Threshold
Air	Benzo(k)fluoranthene	1kg	Below Reporting Threshold
Air	Particulate matter - PM10	1000kg	Below Reporting Threshold
Air	Dioxins and furans (PCDDs/PCDFs) - as ITEQ	1e-5kg	Below Reporting Threshold

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Polychlorinated biphenyls (PCBs) - as WHO TEQ	1e-5kg	Below Reporting Threshold
Air	Benzo(a)pyrene	1kg	Below Reporting Threshold
Air	Naphthalene	100kg	Below Reporting Threshold
Air	Particulate matter - PM2.5	1000kg	Below Reporting Threshold
Air	Particulate matter - total	10000kg	Below Reporting Threshold
Air	Benzo(b)fluoranthene	1kg	Below Reporting Threshold
Air	Sulphur oxides (SO2 and SO3) as SO2	100000kg	Below Reporting Threshold

ID: D, Location: 93m NE, Permit: LP3037UU
Operator: SRCL LTD
Activity: THE INCINERATION OF HAZARDOUS WASTE IN AN INCINERATION OR CO-INCINERATION PLANT WITH A CAPACITY EXCEEDING 10 TONNES PER DAY
Address: Hillingdon Clinical Waste Incinerator Pield Heath Road Uxbridge Middlesex UB8 3NN
Sector EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Mercury	1kg	1.4kg

ID: D, Location: 93m NE, Permit: LP3037UU
Operator: SRCL LTD
Activity: THE INCINERATION OF HAZARDOUS WASTE IN AN INCINERATION OR CO-INCINERATION PLANT WITH A CAPACITY EXCEEDING 10 TONNES PER DAY
Address: Hillingdon Clinical Waste Incinerator Pield Heath Road Uxbridge Middlesex UB8 3NN
Sector EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Carbon dioxide	10000000kg	14405000kg

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	**1**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 32**

ID: D, Location: 93m NE, Permit: LP3037UU
Operator: SRCL LTD
Activity: THE INCINERATION OF HAZARDOUS WASTE IN AN INCINERATION OR CO-INCINERATION PLANT WITH A CAPACITY EXCEEDING 10 TONNES PER DAY
Address: Hillingdon Clinical Waste Incinerator Pield Heath Road Uxbridge Middlesex UB8 3NN
Sector: EfW, Sub-sector: EfW
Releases:

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D13	Blending or mixing prior to submission to any of the operators numbered D1 to D12	668	Absolute Value	19 01 07	solid wastes from gas treatment	Yes
D1	Deposit into or onto land (eg landfill, etc.)	546	Absolute Value	19 01 12	bottom ash and slag other than those mentioned in 19 01 11	No

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.21 Pollution inventory radioactive waste

Records within 500m	**1**

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

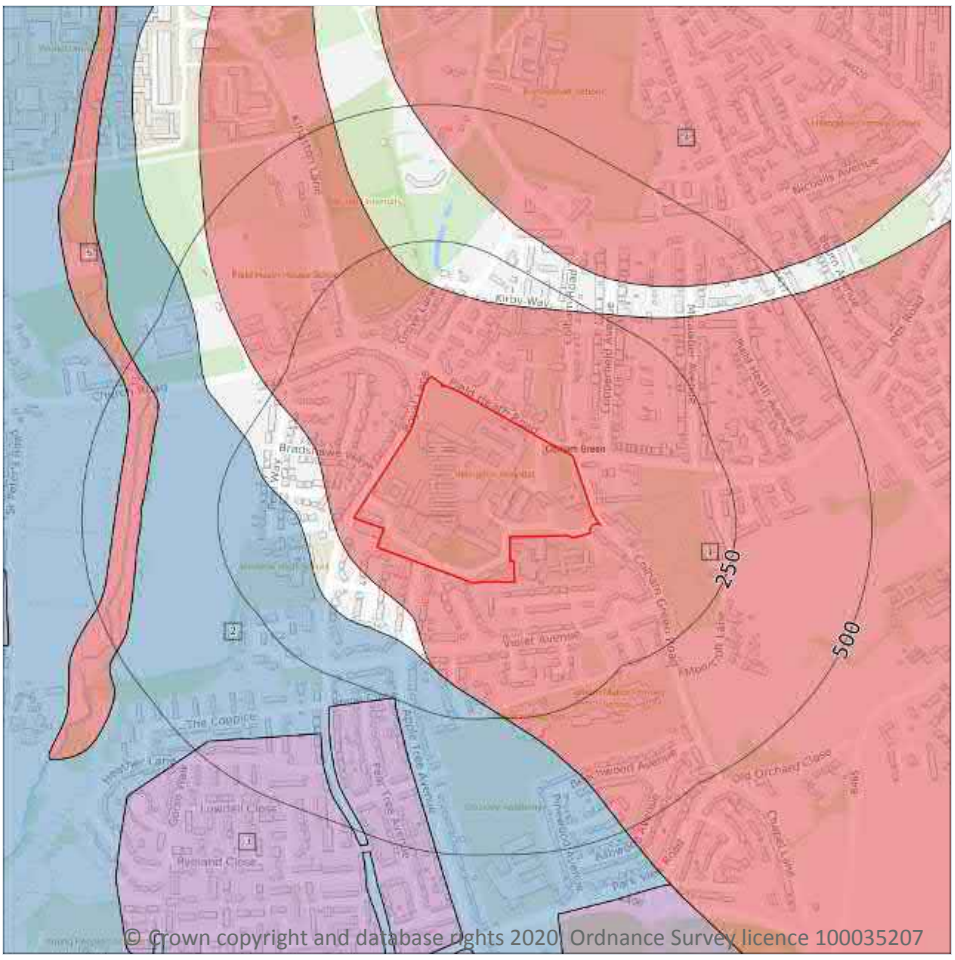
Features are displayed on the Current industrial land use map on **page 32**

ID: D, Location: 128m NE, Permit: AU1178
Operator: HILLINGDON HOSPITAL NHS TRUST
Address: PIELD HEATH ROAD HILLINGDON UXBRIDGE MIDDLESEX UB8 3NN
Releases:

Route	Substance	Quantity released
Wastewater	Selenium 75	27MBq -
Wastewater	Technetium 99m	167508MBq -
Wastewater	Iodine 123	2706MBq -
Wastewater	Total Beta/Gamma (Excl Tritium)	170241MBq -

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	5

Aquifer status of groundwater held within superficial geology.

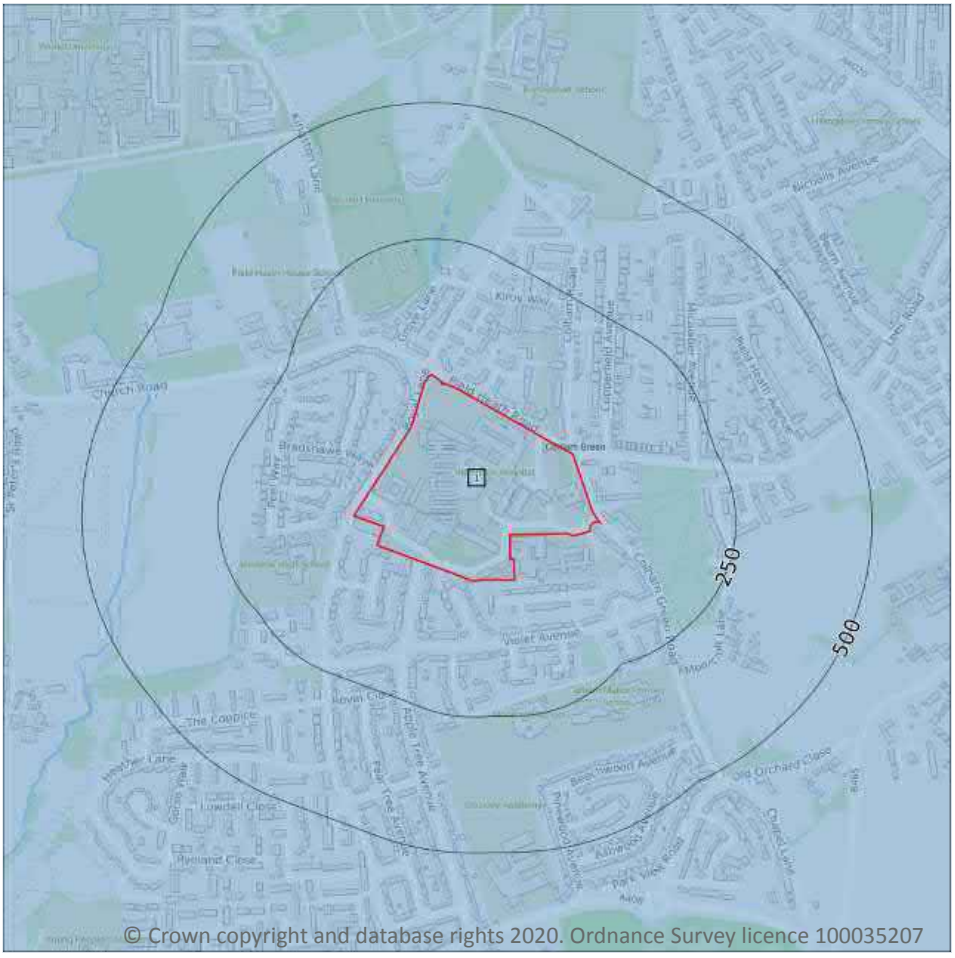
Features are displayed on the Hydrogeology map on **page 47**

ID	Location	Designation	Description
1	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
2	97m W	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

ID	Location	Designation	Description
3	249m S	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
4	308m NE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	387m W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	1

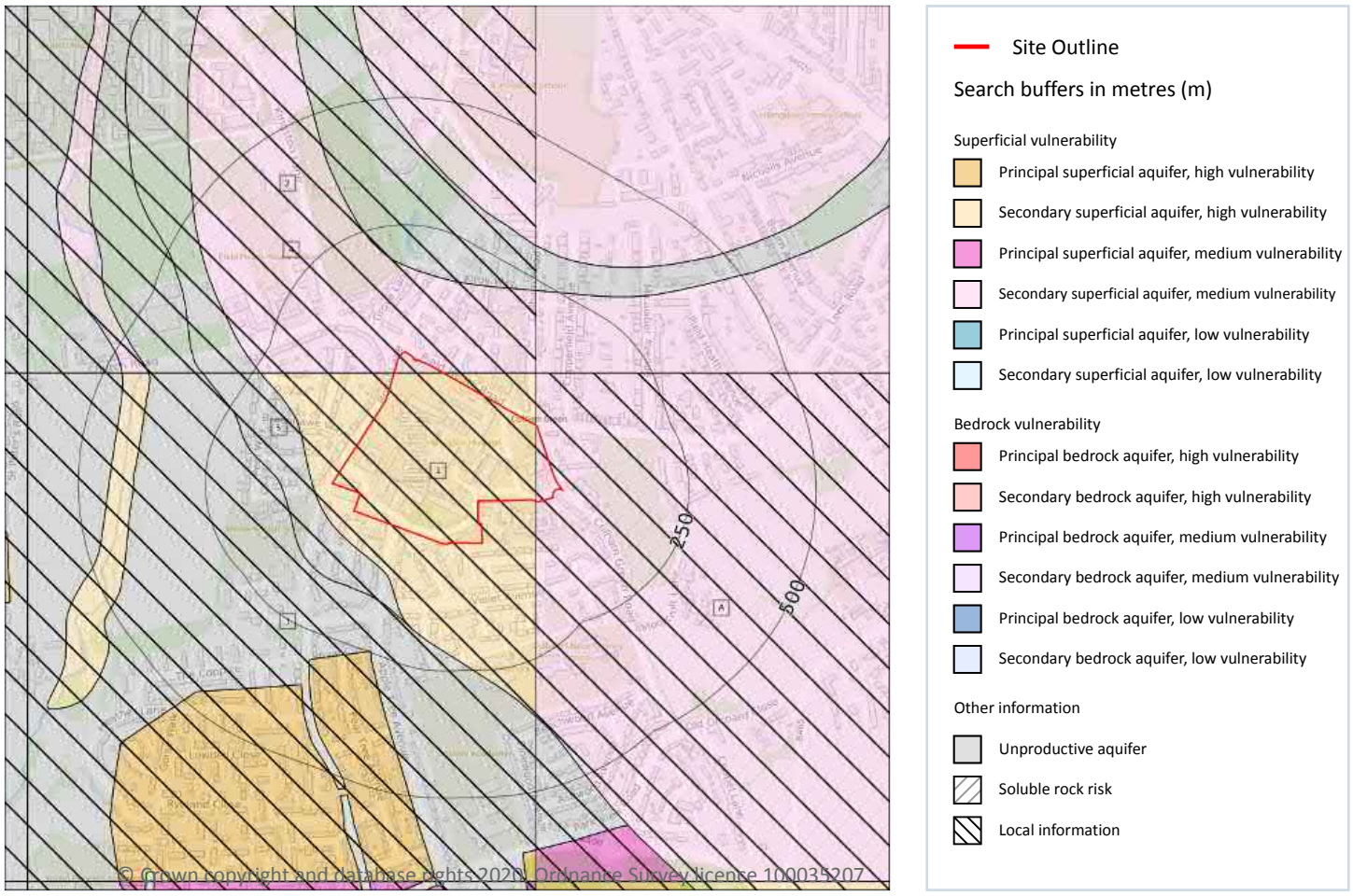
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 49**

ID	Location	Designation	Description
1	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m	4

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 50**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	**On site**	**Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: High Infiltration value: 40-70% Dilution value: 300-550mm/year**	**Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: No Data**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed**
4	**On site**	**Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year**	**Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: Medium**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed**
A	**On site**	**Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year**	**Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: Medium**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed**
5	38m W	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	**0**

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

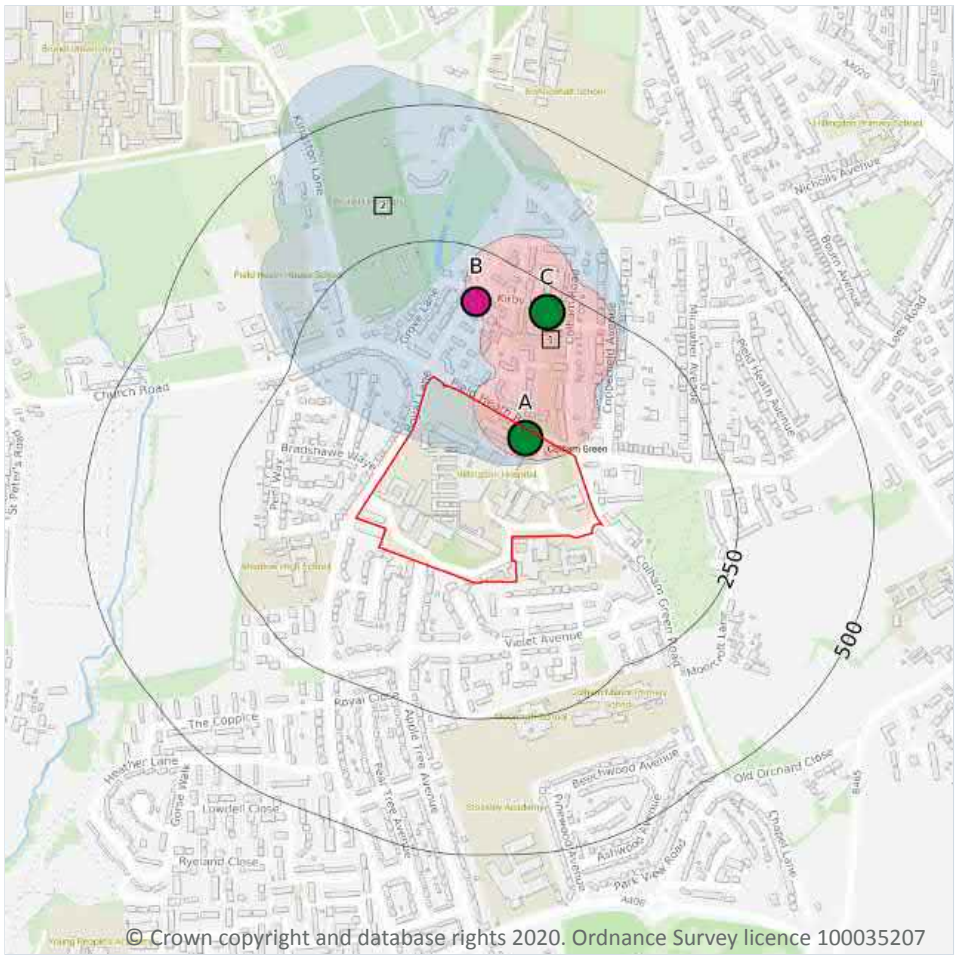
Records on site	3

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

ID	Summary	Additional information
2	**Highly vulnerable Principal superficial aquifer present in river terrace gravels**	**Principal superficial aquifer in river terrace gravels with only a thin cover of low permeability silts and/or alluvium (shown as unproductive)**
3	**Highly vulnerable Principal superficial aquifer present in river terrace gravels**	**Principal superficial aquifer in river terrace gravels with only a thin cover of low permeability silts and/or alluvium (shown as unproductive)**
A	**Highly vulnerable Principal superficial aquifer present in river terrace gravels**	**Principal superficial aquifer in river terrace gravels with only a thin cover of low permeability silts and/or alluvium (shown as unproductive)**

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	21

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 53**

ID	Location	Details	
A	**On site**	**Status: Historical** **Licence No: 28/39/28/0513** **Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services** **Direct Source: THAMES GROUNDWATER** **Point: BOREHOLE B AT HILLINGDON HOSPITAL, HILLINGDON** **Data Type: Point** **Name: HILLINGDON HOSPITAL NHS TRUST** **Easting: 506910** **Northing: 181930**	**Annual Volume (m^3): 200000** **Max Daily Volume (m^3): 1000** **Original Application No: -** **Original Start Date: 05/10/1992** **Expiry Date: -** **Issue No: 102** **Version Start Date: 01/04/2005** **Version End Date: -**
A	**On site**	**Status: Active** **Licence No: 28/39/28/0513** **Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services** **Direct Source: THAMES GROUNDWATER** **Point: HILLINGDON HOSPITAL- BOREHOLE** **Data Type: Point** **Name: HILLINGDON HOSPITAL NHS TRUST** **Easting: 506910** **Northing: 181930**	**Annual Volume (m^3): 138,166** **Max Daily Volume (m^3): 385.40** **Original Application No: -** **Original Start Date: 05/10/1992** **Expiry Date: -** **Issue No: 103** **Version Start Date: 01/01/2010** **Version End Date: -**
B	158m NE	Status: Historical Licence No: 28/39/28/0513 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BOREHOLE C AT HILLINGDON HOSPITAL, HILLINGDON Data Type: Point Name: HILLINGDON HOSPITAL NHS TRUST Easting: 506820 Northing: 182180	Annual Volume (m^3): 200000 Max Daily Volume (m^3): 1000 Original Application No: - Original Start Date: 05/10/1992 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2005 Version End Date: -
C	204m NE	Status: Historical Licence No: 28/39/28/0513 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BOREHOLE A AT HILLINGDON HOSPITAL, HILLINGDON Data Type: Point Name: HILLINGDON HOSPITAL NHS TRUST Easting: 506950 Northing: 182160	Annual Volume (m^3): 200000 Max Daily Volume (m^3): 1000 Original Application No: - Original Start Date: 05/10/1992 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2005 Version End Date: -

ID	Location	Details	
C	204m NE	Status: Active Licence No: 28/39/28/0513 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: HILLINGDON HOSPITAL - BOREHOLE Data Type: Point Name: HILLINGDON HOSPITAL NHS TRUST Easting: 506950 Northing: 182160	Annual Volume (m^3): 138,166 Max Daily Volume (m^3): 385.40 Original Application No: - Original Start Date: 05/10/1992 Expiry Date: - Issue No: 103 Version Start Date: 01/01/2010 Version End Date: -
-	752m E	Status: Historical Licence No: 28/39/28/0277 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: WELL AT LITTLE LONDON NURSERY, HARLINGTON ROAD, HILLINGDON Data Type: Point Name: BARWICK Easting: 507800 Northing: 181700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 13/02/1967 Expiry Date: - Issue No: 100 Version Start Date: 25/09/1996 Version End Date: -
-	752m E	Status: Historical Licence No: 28/39/28/0277 Details: Spray Irrigation - Spray Irrigation Definition Order Direct Source: THAMES GROUNDWATER Point: WELL AT LITTLE LONDON NURSERY, HARLINGTON ROAD, HILLINGDON Data Type: Point Name: BARWICK Easting: 507800 Northing: 181700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 13/02/1967 Expiry Date: - Issue No: 100 Version Start Date: 25/09/1996 Version End Date: -
-	895m NE	Status: Historical Licence No: 28/39/28/0008 Details: Laundry Use Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT WHITELYS PARADE Data Type: Point Name: BLUE DRAGON (HILLINGDON) LTD Easting: 507800 Northing: 182300	Annual Volume (m^3): 37669 Max Daily Volume (m^3): 181.84 Original Application No: - Original Start Date: 08/11/1965 Expiry Date: - Issue No: 100 Version Start Date: 08/11/1965 Version End Date: -

ID	Location	Details	
-	909m NE	Status: Active Licence No: 28/39/28/0008 Details: Laundry Use Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT WHITELYS PARADE Data Type: Point Name: BLUE DRAGON (HILLINGDON) LTD Easting: 507817 Northing: 182299	Annual Volume (m^3): 47,663 Max Daily Volume (m^3): 200 Original Application No: - Original Start Date: 08/11/1965 Expiry Date: - Issue No: 101 Version Start Date: 07/02/2014 Version End Date: -
-	1430m SE	Status: Historical Licence No: 28/39/36/0066 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT STOCKLEY PARK GOLF LIMITED Data Type: Point Name: STOCKLEY PARK GOLF LIMITED Easting: 507580 Northing: 180410	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: 31/12/2009 Issue No: 1 Version Start Date: 11/01/2001 Version End Date: -
-	1430m SE	Status: Historical Licence No: 28/39/36/0069 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: STOCKLEY PARK , UXBRIDGE (BOREHOLE) Data Type: Point Name: STOCKLEY PARK GOLF LIMITED Easting: 507580 Northing: 180410	Annual Volume (m^3): 78000 Max Daily Volume (m^3): 2182 Original Application No: - Original Start Date: 05/11/2001 Expiry Date: 31/03/2013 Issue No: 1 Version Start Date: 05/11/2001 Version End Date: -
-	1430m SE	Status: Historical Licence No: 28/39/36/0069 Details: General Washing/Process Washing Direct Source: THAMES GROUNDWATER Point: STOCKLEY PARK , UXBRIDGE (BOREHOLE) Data Type: Point Name: STOCKLEY PARK GOLF LIMITED Easting: 507580 Northing: 180410	Annual Volume (m^3): 78000 Max Daily Volume (m^3): 2182 Original Application No: - Original Start Date: 05/11/2001 Expiry Date: 31/03/2013 Issue No: 1 Version Start Date: 05/11/2001 Version End Date: -
-	1430m SE	Status: Active Licence No: TH/039/0036/012 Details: General Washing/Process Washing Direct Source: THAMES GROUNDWATER Point: STOCKLEY PARK , UXBRIDGE (BOREHOLE) Data Type: Point Name: Stockley Park Golf Club Limited Easting: 507580 Northing: 180410	Annual Volume (m^3): 78,000 Max Daily Volume (m^3): 2,182 Original Application No: - Original Start Date: 01/04/2013 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 01/04/2013 Version End Date: -

ID	Location	Details	
-	1430m SE	Status: Active Licence No: TH/039/0036/012 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: STOCKLEY PARK , UXBRIDGE (BOREHOLE) Data Type: Point Name: Stockley Park Golf Club Limited Easting: 507580 Northing: 180410	Annual Volume (m^3): 78,000 Max Daily Volume (m^3): 2,182 Original Application No: - Original Start Date: 01/04/2013 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 01/04/2013 Version End Date: -
-	1543m S	Status: Historical Licence No: 28/39/36/0067 Details: Spray Irrigation - Storage Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT STOCKLEY PARK (PHASE 3) Data Type: Point Name: STOCKLEY PARK PHASE 3 LIMITED Easting: 507460 Northing: 180230	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 05/03/2001 Expiry Date: 31-Dec-09 Issue No: 1 Version Start Date: 05/03/2001 Version End Date: -
-	1543m S	Status: Historical Licence No: 28/39/36/0067 Details: Spray Irrigation - Storage Direct Source: THAMES GROUNDWATER Point: STOCKLEY PARK (PHASE 3)- BOREHOLE A Data Type: Point Name: STOCKLEY PARK WEST LIMITED Easting: 507460 Northing: 180230	Annual Volume (m^3): 45411 Max Daily Volume (m^3): 604.8 Original Application No: - Original Start Date: 05/03/2001 Expiry Date: 31/12/2009 Issue No: 3 Version Start Date: 07/12/2007 Version End Date: -
-	1543m S	Status: Historical Licence No: TH/039/0036/004 Details: Spray Irrigation - Storage Direct Source: THAMES GROUNDWATER Point: STOCKLEY PARK (PHASE 3)- BOREHOLE A Data Type: Point Name: Horton Road Limited Easting: 507460 Northing: 180230	Annual Volume (m^3): 45411 Max Daily Volume (m^3): 604.8 Original Application No: - Original Start Date: 02/02/2010 Expiry Date: 31/03/2019 Issue No: 2 Version Start Date: 24/09/2015 Version End Date: -
-	1543m S	Status: Historical Licence No: TH/039/0036/004 Details: Make-Up Or Top Up Water Direct Source: THAMES GROUNDWATER Point: STOCKLEY PARK (PHASE 3)- BOREHOLE A Data Type: Point Name: Prologis UK CCCIX SARL Easting: 507460 Northing: 180230	Annual Volume (m^3): 45411 Max Daily Volume (m^3): 604.8 Original Application No: - Original Start Date: 02/02/2010 Expiry Date: 31/03/2019 Issue No: 4 Version Start Date: 14/09/2018 Version End Date: -

ID	Location	Details	
-	1664m S	Status: Active Licence No: TH/039/0036/004/R01 Details: Make-Up Or Top Up Water Direct Source: THAMES GROUNDWATER Point: STOCKLEY PARK (PHASE 3)- BOREHOLE A Data Type: Point Name: Prologis UK CCCIX SARL Easting: 507412 Northing: 180084	Annual Volume (m^3): 3,500 Max Daily Volume (m^3): 50 Original Application No: - Original Start Date: 01/04/2019 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 01/04/2019 Version End Date: -
-	1854m E	Status: Historical Licence No: 28/39/36/0015 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: TWO WELLS AT SPRINGWELL NURSERY, HAYES END ROAD, HAYES Data Type: Point Name: GOODSON Easting: 508900 Northing: 181900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/07/1966 Expiry Date: - Issue No: 100 Version Start Date: 12/06/1997 Version End Date: -
-	1854m E	Status: Historical Licence No: 28/39/36/0015 Details: Spray Irrigation - Spray Irrigation Definition Order Direct Source: THAMES GROUNDWATER Point: TWO WELLS AT SPRINGWELL NURSERY, HAYES END ROAD, HAYES Data Type: Point Name: GOODSON Easting: 508900 Northing: 181900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/07/1966 Expiry Date: - Issue No: 100 Version Start Date: 12/06/1997 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	**2**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 53**

ID	Location	Details	
-	1742m W	Status: Historical Licence No: 28/39/28/0495 Details: Hydroelectric Power Generation Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER COLNE AT HUNTSMOOR WEIR, COWLEY, MIDDLESEX Data Type: Point Name: RIGBY Easting: 504870 Northing: 181570	Annual Volume (m^3): 21,503,232 Max Daily Volume (m^3): 58752 Original Application No: - Original Start Date: 01/04/1991 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1991 Version End Date: -
-	1979m SE	Status: Active Licence No: 28/39/36/0038 Details: Process Water Direct Source: THAMES SURFACE WATER - NON TIDAL Point: GRAND UNION CANAL AT STOCKLEY ROAD, WEST DRAYTON. Data Type: Line Name: Canal and River Trust Easting: 507770 Northing: 179890	Annual Volume (m^3): 24,000 Max Daily Volume (m^3): 160 Original Application No: - Original Start Date: 26/03/1976 Expiry Date: - Issue No: 102 Version Start Date: 17/12/2007 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	**5**

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 53**

ID	Location	Details	
A	**On site**	**Status: Historical** **Licence No: 28/39/28/0513** **Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services** **Direct Source: THAMES GROUNDWATER** **Point: BOREHOLE B AT HILLINGDON HOSPITAL, HILLINGDON** **Data Type: Point** **Name: HILLINGDON HOSPITAL NHS TRUST** **Easting: 506910** **Northing: 181930**	**Annual Volume (m^3): 200000** **Max Daily Volume (m^3): 1000** **Original Application No: -** **Original Start Date: 05/10/1992** **Expiry Date: -** **Issue No: 102** **Version Start Date: 01/04/2005** **Version End Date: -**

ID	Location	Details	
A	**On site**	**Status: Active** **Licence No: 28/39/28/0513** **Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services** **Direct Source: THAMES GROUNDWATER** **Point: HILLINGDON HOSPITAL- BOREHOLE** **Data Type: Point** **Name: HILLINGDON HOSPITAL NHS TRUST** **Easting: 506910** **Northing: 181930**	**Annual Volume (m^3): 138,166** **Max Daily Volume (m^3): 385.40** **Original Application No: -** **Original Start Date: 05/10/1992** **Expiry Date: -** **Issue No: 103** **Version Start Date: 01/01/2010** **Version End Date: -**
B	158m NE	Status: Historical Licence No: 28/39/28/0513 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BOREHOLE C AT HILLINGDON HOSPITAL, HILLINGDON Data Type: Point Name: HILLINGDON HOSPITAL NHS TRUST Easting: 506820 Northing: 182180	Annual Volume (m^3): 200000 Max Daily Volume (m^3): 1000 Original Application No: - Original Start Date: 05/10/1992 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2005 Version End Date: -
C	204m NE	Status: Historical Licence No: 28/39/28/0513 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BOREHOLE A AT HILLINGDON HOSPITAL, HILLINGDON Data Type: Point Name: HILLINGDON HOSPITAL NHS TRUST Easting: 506950 Northing: 182160	Annual Volume (m^3): 200000 Max Daily Volume (m^3): 1000 Original Application No: - Original Start Date: 05/10/1992 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2005 Version End Date: -
C	204m NE	Status: Active Licence No: 28/39/28/0513 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: HILLINGDON HOSPITAL - BOREHOLE Data Type: Point Name: HILLINGDON HOSPITAL NHS TRUST Easting: 506950 Northing: 182160	Annual Volume (m^3): 138,166 Max Daily Volume (m^3): 385.40 Original Application No: - Original Start Date: 05/10/1992 Expiry Date: - Issue No: 103 Version Start Date: 01/01/2010 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	2

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

Features are displayed on the Abstractions and Source Protection Zones map on **page 53**

ID	Location	Type	Description
1	**On site**	**1**	**Inner catchment**
2	**On site**	**2**	**Outer catchment**

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology

Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	17

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 62**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-

ID	Location	Type of water feature	Ground level	Permanence	Name
2	**On site**	**Inland river not influenced by normal tidal action.**	**Not provided**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**Not provided**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
C	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
3	1m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	3m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	7m S	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
4	67m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	129m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
5	130m NW	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
E	131m NW	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
E	168m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
F	191m N	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	191m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	200m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**6**

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 62**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	**1**

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 62**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
B	**On site**	**River WB catchment**	**Pinn**	**GB106039023070**	**Colne**	**Colne**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	1

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 62**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
11	409m W	River	Pinn	GB106039023070	Moderate	Good	Moderate	2016

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	1

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 62**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
B	**On site**	**Lower Thames Gravels**	**GB40603G000300**	**Good**	**Good**	**Good**	**2015**

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

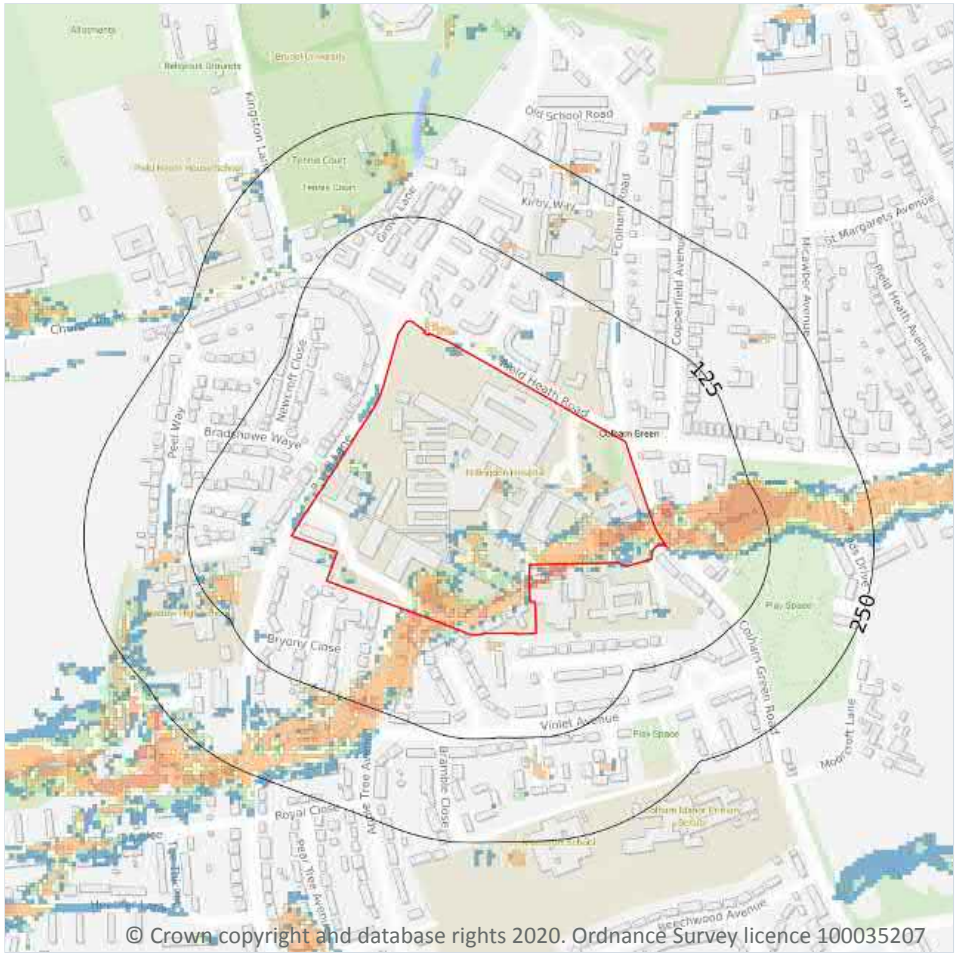
7.7 Flood Zone 3

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline

Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, Greater than 1.0m**
Highest risk within 50m	**1 in 30 year, Greater than 1.0m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 69**

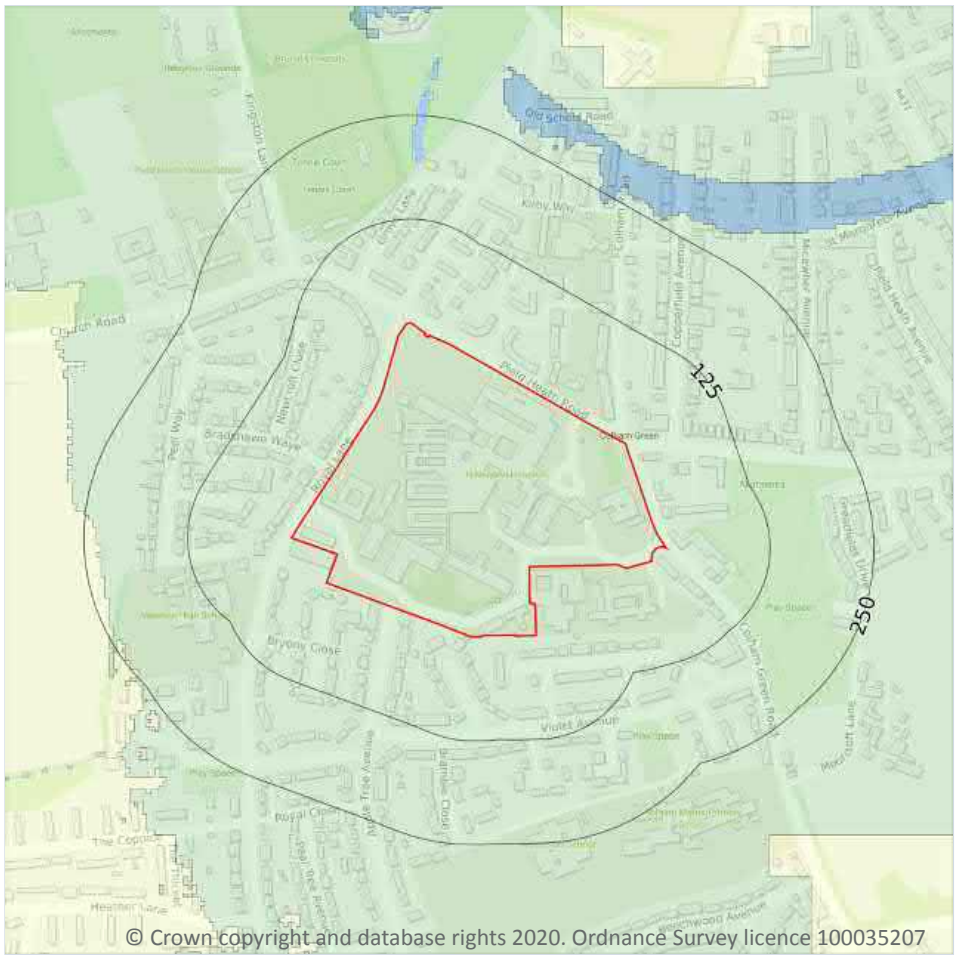
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Greater than 1.0m
1 in 100 year	Greater than 1.0m
1 in 30 year	Greater than 1.0m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

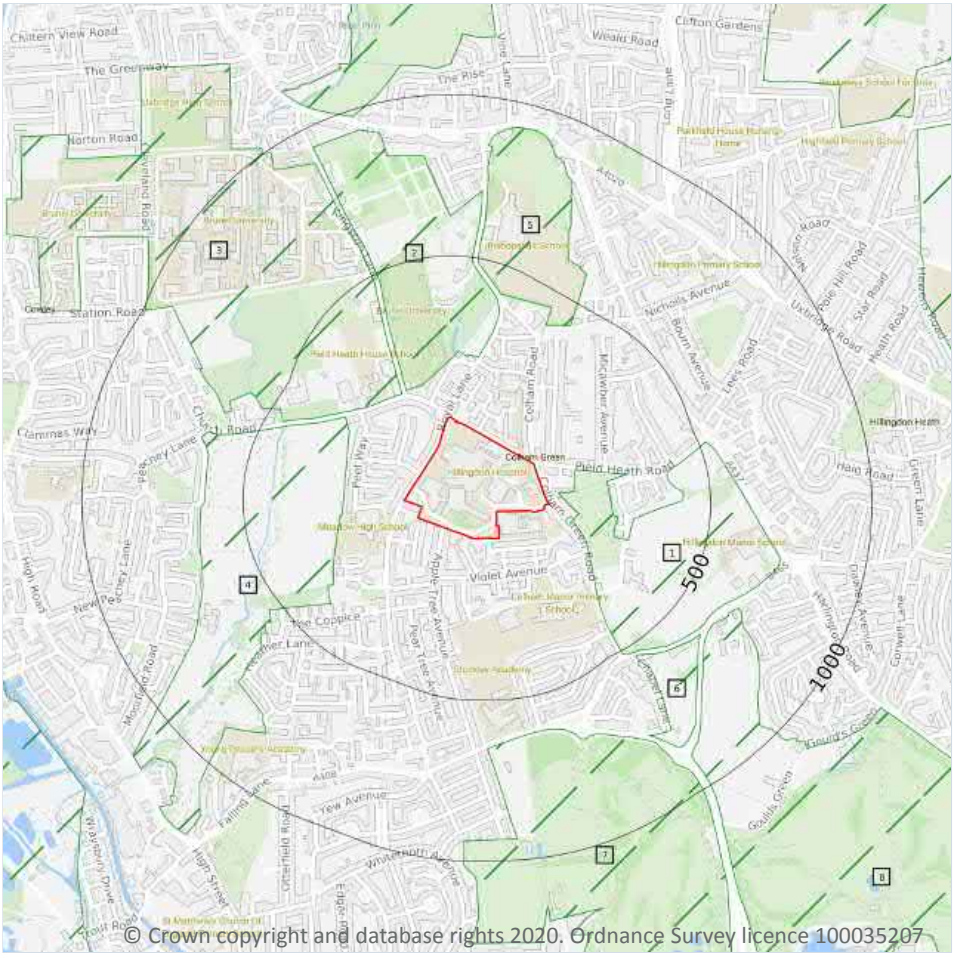
Highest risk on site	**Low**
Highest risk within 50m	**Low**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 71**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



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Site Outline

Search buffers in metres (m)

Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	0

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	17

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on **page 72**

ID	Location	Name	Local Authority name
1	42m NE	London area	Hillingdon
2	130m NW	London area	Hillingdon
3	161m NW	London area	Hillingdon
4	188m W	London area	Hillingdon
5	393m NE	London area	Hillingdon
6	537m SE	London area	Hillingdon
7	612m S	London area	Hillingdon
8	629m SE	London area	Hillingdon
9	979m N	London area	Hillingdon
10	1316m NE	London area	Hillingdon
11	1330m SW	London area	Hillingdon
-	1355m S	London area	Hillingdon
13	1387m NE	London area	Hillingdon
-	1573m W	London area	Hillingdon
-	1628m N	London area	Hillingdon
-	1731m W	London area	South Bucks
-	1901m SE	London area	Hillingdon

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or ‘classified’) under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

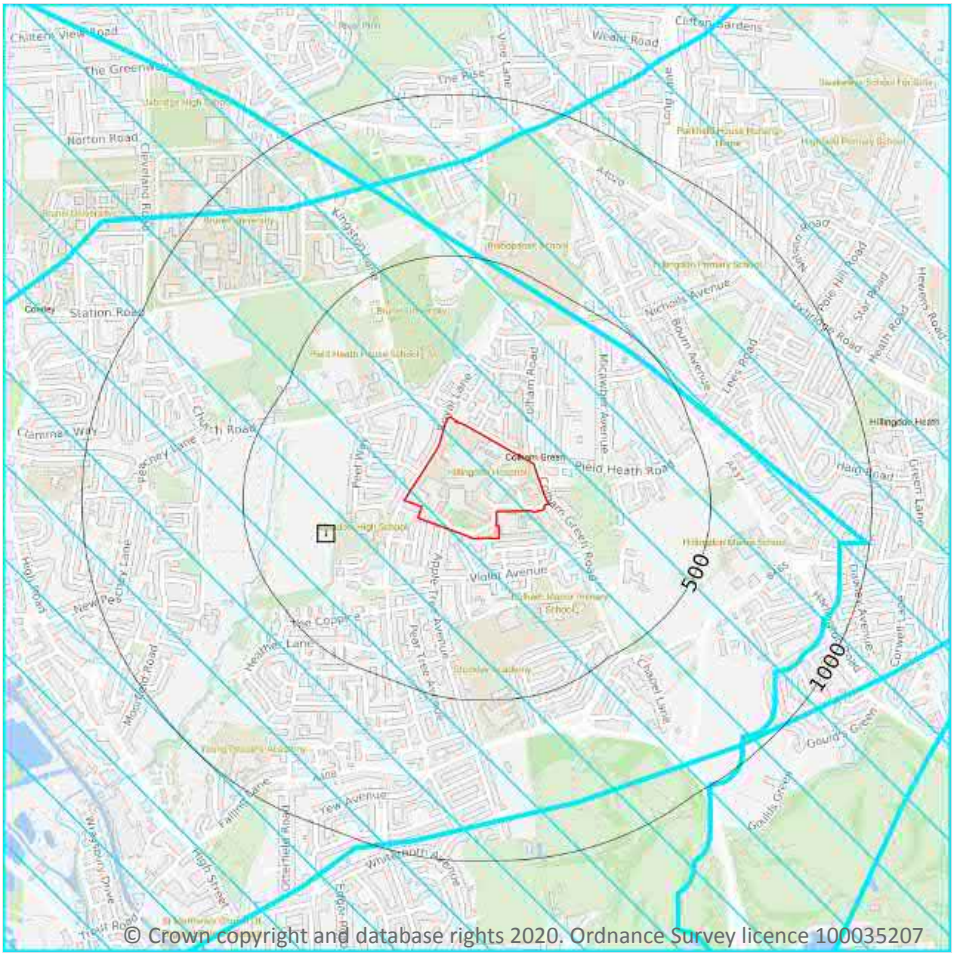
10.16 Nitrate Vulnerable Zones

Records within 2000m	0

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	1

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 78**

ID	Location	Type of developments requiring consultation
1	**On site**	**Infrastructure - Airports, helipads and other aviation proposals.** **Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons > 750m² & manure stores > 3500t.** **Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion** **Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location)**

This data is sourced from Natural England.

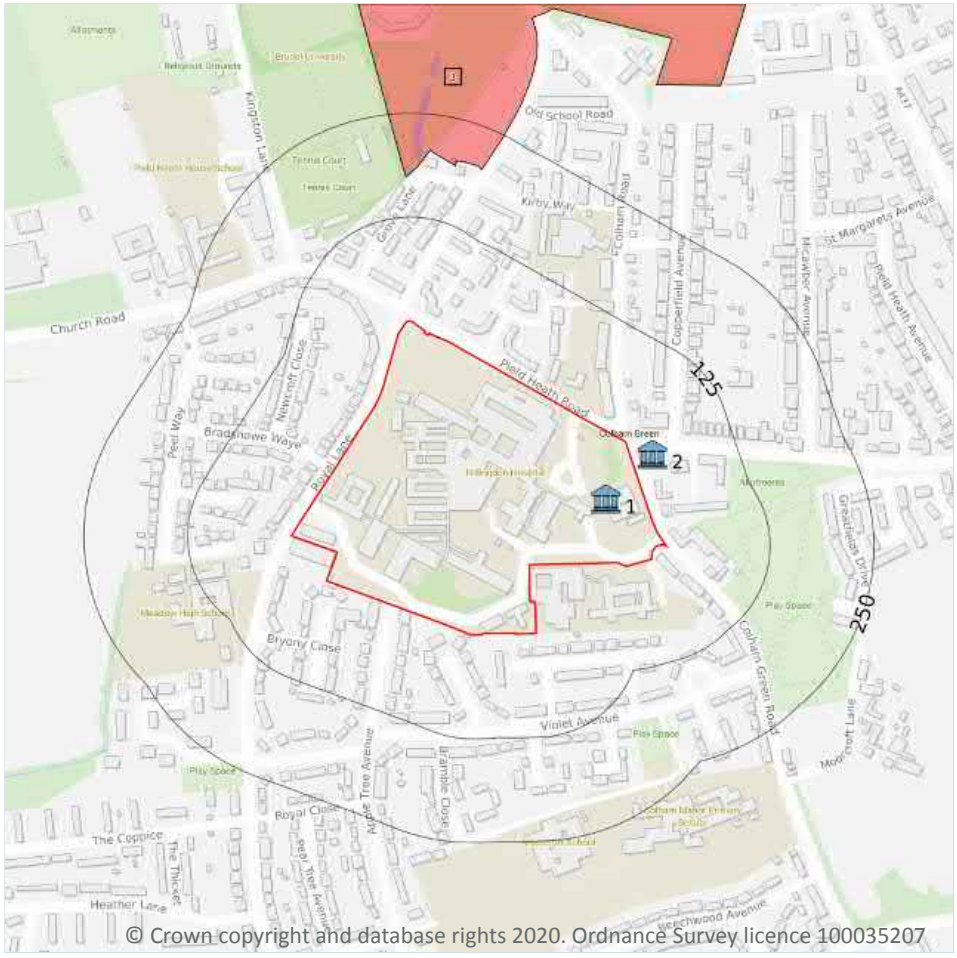
10.18 SSSI Units

Records within 2000m	**0**

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	2

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 80**

ID	Location	Name	Grade	Reference Number	Listed date
1	**On site**	**Nurses Home In Grounds Of Hillingdon Hospital, Hillingdon, London, UB8**	**II**	**1080153**	**06/09/1974**
2	26m E	The Prince Of Wales Public House, Hillingdon, London, UB8	II	1181128	06/09/1974

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	1

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 80**

ID	Location	Name	District	Date of designation
3	174m N	Hillingdon Village	Hillingdon	1973

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.